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SOIL CONSERVATION SERVICE

SNOW SURVEY AND WATER SUPPLY PRODUCTS
REFERENCE

WEST NATIONAL TECHNICAL CENTER

SNOW SURVEY PROGRAM
WATER SUPPLY FORECASTING STAFF
DATA ANALYSIS GROUP
PORTLAND, OREGON

1997

CATALOGING PREP.



SNOW SURVEY AND WATER SUPPLY PRODUCTS REFERENCE

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All programs and services of the U.S. Department of Agriculture, Soil Conservation Service, are offered on a nondiscriminatory basis, without regard to race, color, national origin, religion, sex, age, marital status, or handicap.

Trade names are used solely to provide specific information. Mention of a trade name does not constitute a guarantee of the product by the U.S. Department of Agriculture nor does it imply endorsement by the Department or the Soil Conservation Service over comparable products that are not named.

January, 1988



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SOIL CONSERVATION SERVICE

SNOW SURVEY AND WATER SUPPLY PRODUCTS REFERENCE

I. REFERENCE INTRODUCTION / OVERVIEW

The following reference was developed as part of the Soil Conservation Service (SCS), concerted effort to integrate water supply forecast product use into field application and conservation planning in the western states. The reference was primarily developed for Soil Conservation Service, Conservation District, and other resource management related personnel familiar with the USDA Soil Conservation Service, Snow Survey Program.

The reference, serves as a general bibliography and access document which identifies water supply related products under development or available from the Soil Conservation Service and other agencies. It is not intended to be a complete bibliography of water supply related publications or products nor to provide detailed information concerning collection of SCS, Snow Survey Program data. It is primarily intended to assist in the area of resource management, conservation planning, and conservation practice application, particularly at the field level. Technical disciplines responsible for the various elements of the SCS conservation program should be consulted for applicability of these products to specific locations.

Water supply information is a critical conservation planning element in the western US. Some Soil Conservation Service planning objectives and conservation practices which are related to the forecast water supply include:

- Seasonal irrigation planning.
- Reservoir planning and operation.
- Range planning and management.
- Wildlife habitat management and improvement.
- Recreation planning.
- Timber management.
- Erosion control (based on forecast snowmelt runoff and reservoir release).

In addition to water supply related information, the Centralized Forecast System (CFS), operational database also contains selected daily climatic data for weather stations in the western US. This information, can be applicable in virtually every aspect of the SCS, soil and water conservation mission and should provide an invaluable source of data for all resource management agencies.

The reference is divided into seven main sections. These are:

- I. Water Supply Products ReferenceIntroduction/Overview.
- II. Water Supply Products Access & General Description.
- III. Quick Access Spreadsheet.
- IV. Product Description section.

- V. Operational Database commands section.
- VI. SCS Water Supply Products Information Directory.
- VII. Notes.

WATER SUPPLY PRODUCTS GENERAL DESCRIPTION & ACCESS.

This section is written primarily for SCS and other water supply product users who are not familiar with SCS Snow Survey Program, water supply products and access procedures. It provides a general description of each of the major water supply product types, the status of their development, and deals with computer access requirements. It is anticipated that need for review of this section will diminish as users become more familiar with products and access methods.

WATER SUPPLY PRODUCTS QUICK ACCESS SPREADSHEET.

This Spreadsheet is intended to be the primary document for people who wish to quickly access SCS and cooperating agencies' water supply related information. It briefly describes each product, access procedures and requirements.

A special introduction details the method required for use of the spreadsheets. Spreadsheet abbreviations and symbols are identified in the Spreadsheet Symbol key and Spreadsheet Symbol List.

PRODUCT DESCRIPTION SECTION:

The Product Description section relates to the third column on the spreadsheet- "Description Code". It provides a narrative description of the water supply product listed in the first column of the spreadsheet. The section also describes product parameters, and in most cases, provides an example of the actual product output. The Description Code Cross Reference section will be of special use to those who are not familiar with available water supply products and therefore need more detailed information than that presented on the spreadsheet. Once the products are well understood, access requirements can be quickly handled by use of the spreadsheet alone.

OPERATIONAL DATABASE (ODB) COMMANDS SECTION:

The "Operational Database" is one of the most useful and vital components of the CFS. The database was custom designed for the Snow Survey Program, CFS and is extremely efficient. It is the source for virtually all historical water supply data which is collected and/or used by SCS in streamflow forecasting.

Some of the major data types which can be retrieved from the operational database include snow course measurements, SNOTEL-telemetered sensor values, reservoir storage data, USGS observed streamflow volume, National Weather Service (NWS), monthly precipitation, and NOAA climate station data. In addition, there are numerous data processing routines, utilities, and graphics functions which are tied to information in the ODB.

The Operational Database Commands section provides the user a brief summary of the unique database commands which must be utilized to process a user query for information. A tutorial diskette (which is available from SCS) also provides training in the use of the CFS database.

SCS WATER SUPPLY PRODUCTS INFORMATION DIRECTORY:

The final section of the Water Supply Products Application / Integration Reference Manual provides a directory of SCS, Snow Survey Program staff leaders and telephone access numbers for Snow Survey Program computer facilities at WNTC, Portland. The Snow Survey Program Staff Leaders Directory is not intended to be a complete directory of personnel engaged in that program. It is intended to provide reference manual users with the names, addresses, and telephone numbers of the key SCS contacts for water supply products information in each state, at the West National Technical Center, and at the National Headquarters. The SCS, Snow Survey Program Computer Facilities Directory provides telephone access numbers for SCS computer facilities through various telephone systems. Users will need to work with the state Snow Survey Program, Data Collection Office Supervisor, Water Supply Specialist, or state IRM coordinator for computer access authority, identification and passwords.







II. WATER SUPPLY PRODUCTS

The SCS Snow Survey Program has the potential to provide important water supply information for conservation application in the field. This is particularly true where irrigation planning relates to water supply forecasting. The Snow Survey Program utilizes data from snow courses, SNOTEL and other sources to forecast snowmelt runoff for key forecast points tributary to major watersheds in the western states. The purpose of this reference is to acquaint field-application-level users with water supply products, the status of development, availability, and access procedures thereby providing additional tools to expedite conservation application in the field.

Two major objectives in integration of water supply forecasting into conservation application activities are as follows:

1. Create awareness, on the part of SCS and Conservation District personnel, of existing water supply related products.
2. Provide methods for relating water supply products (existing and needed) to conservation practice application.

The first objective is perhaps the most critical. Once field personnel are aware of data sources they seem to have a knack for figuring out what to do with them and making the most of the effort. However, there are some computer programs currently being developed which may help expedite field office use of the water supply products. The Crop Water Budget (or IWM) series of programs available for some states on the Centralized Forecast System (CFS) menu was designed with this in mind. It is hoped that field offices will consult with state Snow Survey Program staff periodically as they do with other state staff members, and make them aware of field office application methods as well as needs.

The Centralized Forecast System (CFS) is the heart of the forecast data acquisition, analysis and storage system which resides on the SCS West National Technical Center Data General minicomputer at Portland, Oregon. The SNOTEL minicomputer (which also resides at WNTC) collects data and provides reports concerning SNOTEL sites in the western states. Data Collection Group staff and Data Analysis Group staff at WNTC work hand in hand with Snow Survey Program Data Collection Office Supervisors and Water Supply Specialists in each of the western states in data acquisition and forecasting.

Water supply forecast information can be accessed by contacting the local state, Snow Survey Program, Data Collection Office Supervisor or Water Supply Specialist, through special water supply publications, or directly through computer communications programs when computer facilities are available. Further information regarding access procedures is available within this document.

Generally, water supply forecast information available for use at the field level includes the following:

1. Snow water equivalent at snow course and SNOTEL sites (water content of snowpack).
2. Precipitation (water-year-to-date for selected stations).
3. Historical precipitation (monthly and daily -selected stations).
4. Air Temperature (avg., max., min. -current water year - SNOTEL).
5. Historical air temp. (avg., max., min. -selected climate stations).
6. Reservoir Data (key reservoirs -historical and current water year).
7. Forecast Seasonal Volume (at specific forecast points).
8. Forecast Peak and Low Flows (quantity and dates).
9. Observed streamflow volume for specific stream gages.
10. Watershed / Basin comparisons (snow, precipitation, and other).

There are many other types of data collected by the Snow Survey Program. Some are not directly related to water supply but can be used for conservation practice application in the field. For example, the SNOTEL telemetry system is used to collect the following irrigation planning data for evapotranspiration equations at selected sites:

1. Soil moisture.
2. Salinity.
3. Daylight hours and solar radiation.
4. Relative humidity.
5. Soil temperature.
6. Wind direction, speed, and run.
7. Air temperature.
8. Pan evaporation..

WATER SUPPLY PRODUCT GENERAL DESCRIPTION AND ACCESS:

The state, Snow Survey Program, Data Collection Office Supervisor or Water Supply Specialist can provide virtually every type of SCS water supply information which is available for the field office. They are responsible for collection of snow course and SNOTEL data as well as site and system maintenance, and distribution of water supply information. These people have specific knowledge about data acquisition sites and facilities and know how water supply forecast information can best be applied locally. The Data Collection Office Supervisor and Water Supply Specialist are largely responsible for the Water Supply Outlook Report, Snow Survey Annual Data Summary, and numerous special reports which go out during the year. They know how to access the SNOTEL computer and the Data General minicomputer (CFS) at the WNRC, Portland, Oregon. Since their time is very much taken up with data collection and facilities maintenance, these people will not always be available for assistance to the field on a timely basis. For that reason, it is important for SCS field personnel to learn to access water supply forecast information as well.

WATER SUPPLY PUBLICATIONS:

Water Supply Outlook Report:

Water Supply Outlook Reports (WSOR) are SCS, state publications which are published monthly, January through June (in most of the western states). The reports contain general narrative descriptions of water supply conditions and considerable data specific to forecast points within major watersheds or basins. Each basin is described with the following information:

Mountain snowpack -Graph depicting seasonal trend of snow water equivalent (max. and min. of record, average, and current).

Precipitation -Graph depicting percent of normal for season, monthly precipitation, and cumulative (year to date).

Streamflow Forecast -Tabular listing showing forecast point name, forecast period, most probable volume, and percent of average, reasonable minimum volume and percent of average, reasonable maximum volume and percent of average, and 25 year average volume for the forecast point.

Reservoir storage -Tabular listing of reservoir useable capacity, useable storage (current year), storage previous year, and average storage volume.

Watershed snowpack analysis -Tabular listing of selected snow course data including sites which are pertinent to the watershed -shows snowpack this year as a percent of average and as a percent of the previous year.

Snow course data -Many states include monthly snow course measurements (snow depth and snow water equivalent) in the monthly report.

State Water Supply Outlook Reports are also accessible from CFS and are usually available within the first week or two after snow courses are read and streamflow forecasts coordinated with cooperating agencies. Users can access streamflow forecast and other WSOR publication information up to two weeks before it is available through the mail. All of the current water year, WSOR's for the western states (January through June) are stored within CFS.

Snow Survey Annual Data Summary:

The Snow Survey Annual Data Summary is published once each year (near the first of the succeeding year) by each of the western states. The publication includes the following:

Data summaries for snow courses and SNOTEL sites, non-SNOTEL precipitation data and average values for snow courses, snow pillows and precipitation gages.

Fold-out, colored, state map with all snow course and other site names spelled out, standard Snow Survey grid reference system, major basin delineations, and other geographic and cultural features. The reverse of the map contains site names, sensor configuration information, elevation and geographic coordinates.

Glossary to acquaint readers with water supply forecasting / snow survey terminology.

Like the Water Supply Outlook Report, data for the state Annual Data Summary can be accessed via computer terminal from the CFS.

Water Supply Outlook for the Western United States:

Published monthly, January through May, by Soil Conservation Service and National Weather Service. This publication provides generalized, narrative descriptions of water supply conditions, monthly streamflow forecasts for SCS and NWS streamflow forecast points, general westwide precipitation patterns and reservoir storage status for the western US.

Specialized water supply related reports:

Check with the SCS, State Data Collection Office Supervisor or Water Supply Specialist to find out which special water supply related publications are currently available. See the Directory section of this reference for further information.

COMPUTER ACCESSED WATER SUPPLY PRODUCTS:

The following SCS, Snow Survey Program products must be accessed via microcomputer or computer terminal with telephone communications equipment (modem and communications software).

Other computer hardware -not required but very helpful- might include printer, disk drive or cassette tape -for "downloading", and a plotter for graphics. At the present time, CFS graphics displays require TEKTRONIX graphics terminals or computers with TEKTRONIX graphics emulation software. Refer to the reference DIRECTORY section for telephone access numbers, ports, modem baud rates, and other communications information.

In all cases the user will be required to contact the SCS, state IRM coordinator, State Snow Survey Program Data Collection Office Supervisor, or Water Supply Specialist for computer access information. Acceptance of a standard "cooperative agreement" form is required for non-SCS uses of CFS.

SNOTEL computer:

The SNOTEL minicomputer at WNTC is the heart of the SNOTEL telemetry system. The computer polls remote telemetry sites, files site data and produces special reports of site conditions. SNOTEL site information such as snow water equivalent, air temperature, precipitation, and soil temperature is sent to the SNOTEL computer from remote sites by reflecting radio signals off of ionized meteor trails in the upper atmosphere. It is important to remember that SNOTEL sites are typically located at high elevations in mountainous terrain and are installed where acquired data will be most beneficial to basin streamflow forecasting. SNOTEL precipitation and temperature values are not necessarily related to low elevation agricultural areas in the same basin.

SNOTEL telemetry has been used for purposes other than water supply forecasting. Some other uses include collecting irrigation water management parameters, soil salinity, wind run, solar radiation, relative humidity, and many other types of sensor data. It is anticipated that the use of telemetry will be expanded for other direct application activities in the field as sensor technology becomes further developed.

SNOTEL information is used primarily by SCS Data Collection Office Supervisors, Water Supply Specialists, and SCS hydrologists at WNTC for water supply forecasting. SNOTEL data is analyzed with snow course and other information to produce seasonal volume and short-term flow forecasts. The SNOTEL system is also accessed by SCS in the field and by other, non-SCS "cooperators". Access is gained through use of a "logon" identifier which is obtained through the Data Collection Office Supervisor, Water Supply Specialist, or the IRM coordinator for the SCS state office. The SNOTEL COOPERATOR'S MANUAL provides detailed information about the SNOTEL system and is available through the same channels.

With the SNOTEL system it is possible to devise and produce a standard report format with the sensor information specific to remote telemetry sites of interest to the field office, area office, or cooperator. To generate the report, the user need only dial onto the SNOTEL minicomputer system with a computer

terminal and modem, and request the report by name. The SNOTEL report is sent to the user's terminal display (screen) or to a printer. The report can be taken to the local newspaper as is, or the results can be interpreted for other use in conservation planning or technical assistance. Remember that access to the SNOTEL system can be gained anytime during the day except for a 2 hour period (usually 11 am to 1 pm Pacific Standard Time) when the computer system undergoes backup and maintenance.

The SNOTEL system does have certain limitations which need to be considered. There are only two "cooperator" access ports (telephone lines to the computer) available. Obviously, there may be some difficulty gaining access when the system is very busy. Users need to remember to exit the system as soon as possible so that others can gain access. It is imperative that SCS and other system users work with the Data Collection Office Supervisor or Water Supply Specialist when identifying report needs since a limited number of standard report formats can be stored on the system for each state. The SNOTEL system can only be accessed via FTS (Federal Telecommunication System) or commercial telephone lines. It is not available on the USDA DEPNET/TELENET system.

SNOTEL unvalidated data is transferred to the CFS each day by about 9:30 am, PST. Users may dial onto the CFS and review current water year, daily values after that time. Most of the SNOTEL sensor values which are of interest to users can be accessed in this manner. Many of the SNOTEL report formats which were designed for the SNOTEL computer are also available on the CFS. Since there are approximately 20 separate telephone lines and 16 DEPNET ports available for the CFS minicomputer, access to SNOTEL reports through that system is greatly expedited. It is important to remember that SNOTEL values are often not validated and edited until about 15 - 20 days after sites have reported in! If the data looks suspicious contact your local state Snow Survey Program office. Inaccuracies in the data may be caused by ice bridging, site damage, sensor malfunction, etc. If the data looks suspect, request a report for a much longer time period and compare daily values.

Communications parameters for the SNOTEL computer:

The SNOTEL computer and the Centralized Forecast System (Data General Computer) are accessed in different ways! If you wish to communicate with the SNOTEL computer you will have to set your computer or terminal communications parameters as follows:

Parity.....ODD
Baud rate....300 or 1200 (see Directory section).
Data Bits...7
Stop Bits...1

In addition, you will want to set Duplex to FULL or HALF, depending upon whether or not you can access SNOTEL as a cooperator or as a Snow Survey Supervisor (SCS field offices will log on as cooperators). See section VI for telephone numbers and corresponding baud rates.

Centralized Forecast System (CFS):

As mentioned earlier, the CFS is perhaps the heart of the entire SCS water supply forecasting effort for the western states. CFS is a series of interactive computer programs which collect, analyze, store, and make available water supply forecast data. Some of the major CFS components include the following:

WYFOR (Water Year Forecast Program)...The primary source of current water year, monthly, water supply related data and the program which calculates seasonal volume streamflow forecasts. The program provides for input, storage, retrieval and processing of snow course, SNOTEL, precipitation, reservoir and other current water year data which affects the streamflow forecasts. WYFOR provides numerous report formats for displaying current water year data and a routine through which SCS and other agencies and individuals who measure snow courses may input their measurements. WYFOR data is "reset" or transferred to the CFS operational database at the end of the water year (water year runs from Oct. 1 through Sept. 30).

Keywords associated with WYFOR are CURRENT WATER YEAR and MONTHLY.

WYSNO (Water Year SNOTEL data program)...Series of programs and database which provide current water year, daily, and periodic reports for SNOTEL sites. The current water year SNOTEL database query system (WYSQ) which is available under the WYSNO menu is very similar to and compatible with the CFS operational database query system (DBQ). WYSNO provides a "standard" daily report format for each state and for selected major basins or watersheds in the west (UPDATE). WYSNO also provides routines which allow the user to generate site and time period specific reports (DGRE and DGNA). These two options are almost identical to the "RE" and "NA" options on the SNOTEL minicomputer.

SNOTEL data are transferred to the CFS from the SNOTEL minicomputer at about 9:30 am PST daily. If you desire SNOTEL data for the current day at an earlier time you will need to log on to the SNOTEL minicomputer. Please remember that all SNOTEL current day data is unedited whether it is accessed on the CFS or the SNOTEL minicomputer. Unedited data should be reviewed carefully and compared to other recent readings.

Data files retrieved from the WYSNO, WYSQ program can be processed by CFS graphics routines.

Keywords associated with WYSNO are CURRENT WATER YEAR and DAILY SNOTEL sensor data.

ODB (Operational Database)....CFS, Operational database which contains historic data for snow course, SNOTEL, streamflow, monthly precipitation, reservoir storage, and NOAA climatic (daily temperature and precipitation for selected stations in the western states) values. Only selected NOAA climate stations are

supported for the western states. All ODB files are updated annually. DBQ is the database query system by which the user retrieves and processes information stored in the operational database. Many DBQ utilities and processing features were designed specifically for SCS field application.

Many database files can be processed by CFS graphics applications programs. Please refer to the "DATABASE" section of this reference for more detailed information regarding the CFS operational database. Also refer to the "CFS Tutorial diskette", training tutorial.

Keywords associated with ODB are HISTORIC (previous water year), MONTHLY, and DAILY data.

FLIP (Field Location Information Program)...A CFS program designed to link DBQ (Database Query System) sites to SCS field offices. All sites in the Operational Database (ODB) are identified according to political boundary (county), SCS field office, township, range, section, and other locational parameters. This program serves as a "preprocessor program" to the Operational Database and DBQ.

SLIP (SNOTEL location Information Program)...Provides site location and sensor configuration information for Snow Survey Program SNOTEL sites. The program provides a method for locating SNOTEL sites, determining types of sensors, and site installation dates based on relational parameters. The SLIP program will be most useful to SCS Snow Survey Program personnel and other professional hydrologists. For more SNOTEL site information refer to the ANNUAL DATA SUMMARY map.

WSOR (Water Supply Outlook Report)...Computer accessed, monthly, State Water Supply Outlook Reports for the western states for the CURRENT WATER YEAR. The reports are available during the first or second week of the following month after forecast values have been coordinated with other agencies. Each of the reports (they are published January through June in most states) is stored on CFS and may be accessed at any time during the current water year. The CFS versions of the State Water Supply Outlook Report are typically available two to three weeks before the publications.

The WSOR is the primary source of SCS, streamflow forecast information.

ADS (Annual Data Summary)....Yearly, summarized table of selected snow course, SNOTEL, and other water supply forecast related data for the PREVIOUS WATER YEAR. The ADS is available by state. The published version is usually sent out after January 1 and includes a snow course and SNOTEL site map. ADS tables for each state can be accessed from within the CFS.

IWMThis is a series of interactive computer programs which link seasonal irrigation planning with water supply forecasts or provide SCS field offices with routines to assess irrigation related projects. One of the programs called "SWAP" (Seasonal

Water Planning) helps users evaluate a farm on a field-by-field and farmwide basis to determine what kinds of conservation measures might be considered to balance the farm water demand with the forecasted supply. This program is also available on a 5 1/4" diskette for "IBM" compatible microcomputers and for SCS, FOCAS equipment.

FEAR (Forecast Error Analysis Review)...This program compares Snow Survey Program forecasts with actual observed streamflow at forecast points. The program provides a method to detect forecast error trends and determine the need for forecast procedure modifications. This program is designed to be used by SCS, Data Collection Office Supervisors, Water Supply Specialists, and hydrologists at WNTC, Portland.

GRAPHICS.....This is a series of graphics programs designed to display snow survey related data which has been retrieved from the operational database with DBQ, WYSQ (water year, SNOTEL query system) and other specially formatted tables. Most of the graphics routines are designed for "TEKTRONIX" graphics terminals or terminals with "TEKTRONIX" emulation capabilities. This CFS menu option will only be displayed for users who identify their terminal type (at logon) as one of the "TEKTRONIX" series terminals.

MAIL (CFS mail system).....A CFS utility program which provides users with the capability to send and receive messages to and from other CFS users. As a cautionary note, it is important to remember that many CFS users share the same logon "username" or "id" and "password" and are therefore, eligible to read and delete any mail sent to that CFS logon ID. Users should review mail periodically since CFS changes will be announced through the MAIL utility.

PRT (CFS file print or "download" utility)...The CFS utility program which provides users with the capability to "download" (transmit to the user's computer) a file or report which was generated during a session in CFS. Virtually all interactive CFS programs give the user the option of having requested output be sent to their computer display immediately, or to a special "file" in their "user directory". In most cases, the program will allow the user to name the file (if that option is exercised). Whenever a file is created by CFS, it is stored in the user directory by the file name. The user may then use the CFS UTIL menu option "PRT" to download the file (by that file name) to their own computer.

"PRT" is a handy way for the user to gather up many different reports, tables, etc., and retrieve them at their local computer. Alternatively, the user may also use their own communications software "data capture" routine to download as the data is displayed on the screen.

OtherThere are many other CFS programs and features which have not been discussed here. Some of these are designed to interactively process user input data and files created within

the operational database. New features and programs will continue to be incorporated into CFS.

CFS Tutorial....The Water Supply Forecasting Staff (WSFS) at Portland, Oregon has developed an "IBM" compatible, 5 1/4" tutorial diskette which is designed to provide users with "off line" CFS training. The diskette provides training in most of the major components of the CFS without the user having to be connected to the actual system via telephone lines. This training diskette was primarily designed for SCS field, area, and state office use. A CFS "Training Workbook" is also available through SCS state Snow Survey Program offices.

CFS COMPUTER ACCESS:

CFS was first officially used to generate water supply forecasts for the western states on January 1, 1985. The series of programs resides on the Data General, MV8Q00 minicomputer at the SCS, WNTC. CFS can be accessed via computer or computer terminal via the Federal Telecommunications System (FTS), the DEPNET/TELENET network, or by commercial telephone lines.

There are currently 15 commercial telephone access lines in operation on the CFS. In addition, there are 8 DEPNET/TELENET access ports and 8 XODIAC access ports available (see Directory section of reference). "Logon ID's" and "passwords" can be obtained from the SCS, state Data Collection Office Supervisor, Water Supply Specialist, or IRM coordinator. Standard logon procedures are as follows:

I. Accessing CFS through the DEPNET/TELENET system:

A. Configure your computer terminal to communicate with the Data General (CFS):

1. parity.....none (parity for SNOTEL is different).
2. baud rate.....300 to 2400 (DEPNET autoconfigures to 2400).
3. data bits.....7 (or 8)
4. stop bits.....1
5. echo.....on (if characters are duplicated set to off.)

NOTE!...SCS computers with BLAST or XFER communications software are set with these parameters in the correct "default" condition.

B. Dial the local DEPNET/TELENET telephone number (ask your federal telecommunications representative for the closest DEPNET telephone number). SCS field offices will need to consult with the state office -probably IRM coordinator- for DEPNET access numbers.

C. When access to DEPNET/TELENET is gained, proceed as follows:

1. Press carriage return twice in succession.
2. Enter terminal type (or simply press carriage return -default terminal type is "D1" -TELENET designation-.
*** note *** you must always press the carriage return

-
-
3. after you have finished pressing a sequence of keys.
4. Enter your DEPNET/TELENET ID after the "@" prompt.
*** note *** DEPNET/TELENET ID and password are not the same as those required for CFS access! Secure your DEPNET/TELENET ID and password from your SCS, state IRM coordinator
5. Enter the CFS "port number" following the next "@" prompt. The port number tells DEPNET which computer you wish to communicate with. The Data General port number which should be used most often is C 503624 . Note the space between the letter "C" and the number "5". Check the Directory section for further information.
6. Proceed to section IV below.

II. Accessing CFS through XODIAC (most FS computers)

Users who access the CFS through a DATA GENERAL minicomputer may be able to use the TELENET, XODIAC system. The local SCS state Snow Survey Program office (see Directory section) can supply the following information for XODIAC access when a cooperative agreement has been completed between SCS and the user agency:

Host name.
CFS, Data General I.D.
CFS, Data General address.

There are currently 8 XODIAC/TC access ports available on CFS (see Directory section).

III. Accessing CFS through commercial or FTS telephone lines.

A. Configure your computer or terminal to communicate directly with the CFS by setting the following key communications parameters (*** note *** SCS FOCAS equipment communications software default parameter settings do not need to be altered).

1. Parity.....none
2. Buadrate....300 - 1200 (4 lines 300-2400)
3. Data bits....8
4. Stop bits....1
5. Echo.....off

IV. Log onto the SCS Data General to access CFS. When access is gained to the computer proceed as follows:

A. The system will ask you to type in your "username". SCS field offices will enter "FOWS.XX" (where FOWS is the SCS field office acronym for "field office water supply" and XX is the two digit state Fips code for the state). For example, SCS field offices in Nevada would enter "FOWS.32", field offices in Colorado would enter "FOWS.08", and so on (note that the letter "O" and the numeral "0" are not the same and they should not be

confused! Also, be careful about blank spaces. If they are not needed don't use them! For example, "FOWS.32" is totally different from "FOWS. 32"!)

B. The system will ask you to type in your "password". Again, you will need to get the "password" from your SCS, state IRM coordinator, Data Collection Office Supervisor or Water Supply Specialist. Your password should not show up on the screen as you type it! If it does, you need to set your communications software parameter "echo" to "off". If your "username" and "password" are correct the computer screen will clear and the CFS main menu will be displayed. If this does not happen, don't panic! Get on the telephone and call the SCS state IRM coordinator and find out why it didn't work.

*** note *** SCS personnel may refer to the CFS "Training Workbook" or the CFS "Tutorial Diskette Program" for detailed, step-by-step procedures for accessing CFS through FOCAS equipment.

V. CFS Conventions

The CFS is a "menu driven", interactive, series of computer programs. That is, you may access any or all of the programs but they can only be accessed one at a time and you must enter each one from the opening menu that you see when you log onto CFS. The CFS is considered interactive because you are expected to supply input (type in answers to computer queries) as the program proceeds. The programs will prompt you when you are expected to type something in (provide "input") and will not continue until you do so. You must always press the carriage return or "enter" key after you have entered a response.

Many different computer programmers are responsible for the programs, databases, and routines available on the CFS. An effort has been made to adhere to a standard set of programming conventions to accommodate the user, however, the user will note some remaining inconsistencies. For example, sometimes the programmer will prompt the user for a carriage return by requesting that the user "type CR" to continue. Other times the programmer will display the prompt "Press NEWLINE to continue". Still other times, the program may request that the user "press the return key" to continue. In another example, a programmer may ask the user to type the letter "Q" to "quit" a program. Another programmer may require the user to type the letters "EX" to exit and so on. Some programs offer "help" routines while others do not. Please remember to READ THE ENTIRE DISPLAY BEFORE TAKING ANY KEYBOARD ACTION! Most of the programs and routines have been written so that the user will know what is required by the prompt. If you have any trouble please contact one of the SCS, state Snow Survey Program offices (see Directory section).

CFS File Creation, Access and Maintenance

Many CFS programs and routines provide the user with the option of having requested information sent to the user's terminal

display or to a "file". When the user requests the former, CFS will route information directly to the terminal screen. Sometimes, however, the user would like to dial onto the CFS and gather up several different reports or tables and store them temporarily on the CFS minicomputer so that they can be accessed at a later time or date. When this option is available, the program will prompt the user for a "file name". A "file name" is simply the name of a file or folder which will store the requested data or report. The user should enter a unique file name which can be easily identified later.

When the user has entered a file name, the CFS will quickly route the requested data or report to that storage place. This will happen very rapidly so that the user can go ahead and retrieve other data or reports on the CFS at the same time. All user named files which are created in CFS are stored in one common place called a "directory". The directory is accessed by the user under the "CFS", "UTIL" menu. Later, the user can dial onto the CFS, go to the UTIL menu, issue the "PRT" routine command, and "download" the file(s) which were created earlier. All of this seems a little tricky to those who have not "downloaded" or "captured" files from a computer but CFS does a good job helping you out with the process. Typically, the user would go to the "UTIL" directory, enter one of the commands which shows the contents (file names) of the directory, specify which file is to be "downloaded", turn on the local micro-computer "data capture" or "file capture" process, and press the carriage return. CFS will begin displaying the requested file on the user's terminal screen and it will be simultaneously captured to the user's micro-computer storage device.

Additional Considerations:

All CFS users who have the same "username" and "password" share the same CFS "Directory". All CFS directories are limited in terms of storage area. CFS processing speed is directly related to the amount of "free memory" available (memory not used for file storage). When you attempt to "end" your session on CFS the system will ask you if you would like to do "file maintenance". "File maintenance" is a procedure by which the user "cleans up" the directory by deleting files which are no longer needed. Please make use of this option and delete all files which YOU HAVE CREATED after you have successfully "downloaded" them from CFS! Please DO NOT DELETE FILES WHICH YOU HAVE NOT CREATED! If you should mistakenly delete a file, don't panic! The CFS is "backed up to tape" every day and the file you deleted can probably be recovered without a lot of difficulty. Contact your SCS state Snow Survey Program office should this occur.

Please be careful about naming files. File names should be unique (the file name you use should not already exist in your directory)! File names need to be more than one character and there should be no blank spaces in any file name. Try to keep file names to about 8 characters (you can mix alpha and numeric characters). Try not to use special characters such as the "/" within a file name. Try to use a file name which you can easily

identify at a later date. It would be wise to always write down the file name you have created along with the date, time, and perhaps an explanatory paragraph for your local office records.

Terminal Types:

CFS should be compatible with virtually all types of computer terminal displays. When you first "log on" to CFS (you have successfully entered your username and password), the system will prompt you with a menu from which you must identify your terminal type. In most cases you will be able to make a correct selection from the terminal types displayed. The purpose of this feature is to provide a means by which the CFS can "clear" your screen and begin displaying characters in the correct position. There are dozens of different terminal types and it is impossible to create a system which will automatically handle all of the different requirements. If you do not see your terminal type listed, simply choose one which you believe is similar to your own. For example, many computers and terminals are "IBM compatible". If yours is one of them, select the option for IBM types.

If you have a terminal which uses a printout for display purposes (no screen) then you will want to select one of the terminal types which will "scroll" 2 lines or 16 lines. If you do not select one of these "hardcopy" types, CFS will send a "form feed" (advance your printer paper one full blank page) every time the system goes to a new screen.

If you need assistance with this CFS feature, please refer to the Directory section for a list of SCS State Snow Survey Program offices and telephone numbers.

Screen, Cursor, and Communications Flow Controls:

The following special "control" sequences are recognized by the CFS, Data General minicomputer (when generated by remote terminals):

*** note *** to issue a "control sequence" press the "control" (or "ctrl") key down and KEEP IT DOWN while you press the keys listed below!

Ctrl Y Back up one character to the left of the current cursor position. This feature allows you to move back and re-type a character which you had previously entered incorrectly.

Ctrl U Delete every character entered from the keyboard on the current line. This feature allows you to "erase" everything you have entered in response to the current CFS prompt so that you can re-type it. This feature is especially handy when you are experiencing a "noisy" telephone line connection to the CFS and garbled characters appear on your terminal display. You must delete those unwanted characters before you press the carriage return or the CFS will try to interpret them as legitimate input.

Ctrl O Suspend screen display resulting from a previous request and return to a subsequent CFS program or menu prompt. This feature is especially handy when the user has requested that CFS display a large amount of data and then decides that there is not enough time to wait for the entire CFS file to be displayed to the terminal.

Ctrl S Suspend transmission from the host (CFS) to the user terminal. This feature is especially useful when the CFS display scrolls by faster than the user can read it or when the user wishes to temporarily halt communications for any reason. You must use the "Ctrl Q" sequence described below to resume transmission.

*** note *** Sometimes CFS will not accept your "suspend transmission" control sequence immediately. You will need to wait until the CFS stops displaying characters before engaging in any other keyboard activity.

Ctrl Q Resume transmission from the host (CFS) to the user terminal after a transmission interrupt. This sequence is used after a "Ctrl S" sequence has been entered and the user wishes to resume communications with the host.

*** note *** Sometimes a combination of user sent characters and telephone line "noise" will cause the host (CFS) to suspend transmission. If you think this may be the case, try sending the "Ctrl Q" sequence before you attempt to enter any other commands to the host!

Patience:

The speed with which the CFS responds to your keyboard is directly dependent upon the amount of "traffic" encountered from other users, the variety of tasks ordered by yourself and other users, the amount of free memory available on CFS, and a host of other variables. Many times it is tempting for the user to re-enter a keyboard response, press the carriage return, or simply slap the terminal monitor in an effort to speed up processing time. Infrequently the CFS, Data General minicomputer simply "goes out to lunch". Whenever possible, give the system time to process your request. When it is your turn to respond you will be notified by the system and you will not have to guess. If the system "locks up" on you and does not recover, go ahead and terminate your connection at your end but please call the SCS state Snow Survey Program office and let them know of the difficulty.

CFS On-Line Help:

There are several levels or types of CFS "on-line" help available to users. The major types are as follows:

Menu help.....Called from a specific CFS menu as one of the listed menu options.

Program help.....Designed into CFS computer programs by the programmer. This help is specific to the current program and is not available system-wide at this time.

"On Line Manual"...This feature is currently under development. When implemented the user will be able to access the entire electronic manual from the opening CFS menu or the appropriate section of the manual from a given CFS menu. The electronic manual will be "downloadable" in total or by section.





III. Centralized Forecast System Product Access Spreadsheets

Introduction

Purpose:

This section of the CFS Water Supply Products reference is designed to expedite user access of CFS products. The user should be familiar with the CFS menu system and the major products within the system. Once familiarity is gained, the user can refer to this section of the reference, log on to the CFS, and use the spreadsheets to quickly retrieve data, and reports.

Description:

There are 5 major water supply related types of information available in the CFS: snow; reservoir; precipitation; streamflow; and temperature. When the user has determined which data type is needed, the next step is to find out what kind of related information is available on the CFS. One way to do that would be to dial onto the system and work through all of the CFS menus until the correct information is found. Unfortunately, the CFS is a fairly large system and this could require considerable time. It would be much better to have a reference which listed CFS information options according to the data type. It would also be nice to include in the reference, examples of what the user might expect to receive on the CFS. The "Spreadsheet" and "Product Description" sections of this reference have been provided to meet this need.

Using the Spreadsheets and Product Description section:

In this section you will note 5 fold-out spreadsheets (one for each major CFS data type), and a "Spreadsheet Symbol Key". The "Spreadsheet Symbol Key" is designed to help you understand acronyms, abbreviations, and symbols used in the 5 spreadsheets. The spreadsheets are used as follows:

- A. Locate appropriate spreadsheet by data type.
- B. Read down the list of abbreviated descriptions under the "PRODUCT" heading and mark those rows which seem appropriate to your needs.
- C. Select one of the appropriate rows and begin:
(work your way across the spreadsheet from left to right in one row)
 1. Determine the CFS format for the desired data (under "FORM" heading).
 2. Note number under "DESCR. CODE" heading.
 3. Turn to next section of reference (PRODUCT DESCRIPTION) and page through the section until you locate the correct number which you identified under the "DESCR. CODE" heading (note! Use the "CODE #" at the top of the page, not the page number at the bottom!)
 4. Look over the example displayed in the PRODUCT DESCRIPTION section and determine whether or not this

product is appropriate to your needs. You should read the description narrative at the top of the page and note the format of the example.

5. Turn back to the SPREADSHEET and mark the PRODUCT abbreviated description if it is one which you have an interest in. If it is not, go on to the next SPREADSHEET PRODUCT and repeat the above. You should repeat this process until you have reviewed each of the examples which are available. When you are through you will have a record of those CFS data types which are most important to your needs.
- D. Dial onto the CFS and log in as usual.
- E. Move through CFS until you see the opening "CFS" menu.
- F. Open your reference to the appropriate spreadsheet.
- G. Move across the spreadsheet column headings until you see the first one which includes "COMMAND".
- H. Drop down this column until you reach the row of the product description which you are interested in.
- I. Note the spreadsheet "command" (commands are imbedded in brackets <>).
- J. Enter this command in response to the CFS menu displayed on your terminal (and press carriage return). CFS will automatically move you to the next menu or program.
- K. Read the screen display. You will note that there is a list of options for you to choose from.
- L. Look at your reference Spreadsheet again. Move over (to the right) one column (under the next column heading "COMMAND") and note the command imbedded in brackets.
- M. Enter this command in response to your terminal display menu or program. CFS will automatically move you to the next appropriate menu or program.
- N. Repeat the above process for each "COMMAND" column on your spreadsheet until you arrive at the CFS product for the data type which you selected. You will note that the final product is displayed in a format very similar to that which you looked up earlier in the reference "PRODUCT DESCRIPTION" section.

As mentioned earlier, CFS may be described as a "menu driven system". That is, you move from one place to another within the system by making selections from the menu, however, CFS can also be operated in a command mode by experienced users. This feature provides the capability of "stringing together" logical menu commands so that you can skip through menus quickly to locate a given product. For example, if you wanted to go into the CFS and

retrieve a SNOTEL report without having to go through all of the intervening menus you could do the following:

- A. From the opening CFS menu enter the desired option for that menu (CFS). Do not press the carriage return.
- B. Look at your reference spreadsheet and enter the next command under the "COMMAND" column (for this product description). Note that there should be a blank space between this command and the first one you entered (in this case your command would be "PRODUCTS". Do not press the carriage return.
- C. Go back to "B" above and repeat this procedure until you have entered each of the spreadsheet commands. Each one must be separated from the first by a blank space.
- D. When all of the commands have been entered (you are still at the CFS main menu) press the carriage return. The system will automatically route you through to your desired product and will not display the intervening menus.

Using CFS in command mode can save a considerable amount of both user time and telephone connect time. The spreadsheet, in this manner, makes it relatively easy to operate in command mode most of the time. You should first get acquainted with the CFS menu system, however. Remember that the CFS will change from time to time and your reference may need to be updated.

CFS Menu Map:

A general "map" to the CFS menu system is included at the end of this section. The bold characters in each box (each box represents an option from a menu) are the menu "key words" which must be entered to move downward to the next series of boxes (which represent a subsequent menu). As mentioned above, you may choose to concatenate a "group" of menu options to go directly to a given location in the CFS. For example (refer to the map) if you wanted to go to the "WYSNO" menu from the CFS main menu (CFS, UTIL, HELP, END) you could type the command "CFS PRODUCTS WYSNO" and press the carriage return. CFS would automatically skip the "PRODUCTS" menu and go directly to the "WYSNO" menu.

To "back up" one menu you could enter the menu option "EXIT" and the system would do so. You may only back up one menu at a time! If you have moved "downward" into the CFS and do not wish to "back out" one menu at a time you may choose the "END" menu option (when it is available). This option will take you out of the CFS and will ask you if you wish to do "file maintenance" before you leave. If you indicate that you do not wish to do file maintenance, the CFS will terminate your telephone connect line immediately.

Limitations:

The reference spreadsheet and product description section do not refer to all products, programs, and references which are on the CFS or which relate to water supply forecasting. The purpose of the spreadsheet is to allow the user to quickly locate and extract pertinent data. Very few references are made to CFS computer programs designed for use by hydrologists at the WNTC.

Not all of the spreadsheet products are available on the CFS. Some of the reference subjects are, in fact, publications. Some of the publications are from other agencies besides SCS.

CFS has been evolving and will continue to evolve over time. This reference is accurate as of the date of publication. The reference is available as a "downloadable" document from the DATA GENERAL minicomputer. The computer version of the reference will be updated as significant changes are made to the CFS. The user may contact the local state Snow Survey Program staff to determine whether or not it is advisable to download a current version due to significant changes.

PRODUCT	DESCR. CODE	FORM CODE	WATER YEAR	UPDATE PER100	REPORT PER100	SOURCE/ <COMMAND>	SOURCE/ <COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>
SNOW															
SNOTEL computer, snow water eq.	100	table	curr	daily		Oct-Sep	<RE>								
SNOTEL data via CFS computer	101	table	curr	daily		Oct-Sep	<CFS>	<DATABASE>	<WYSNO>	<06RE>	[or 06NA]				
SNOTEL computer via CFS	102	table	curr	daily		Oct-Sep	<CFS>	<DATABASE>	<WYSNO>	<CALLHP>					
SNOTEL historic database /CFS	103	table	hist	spl	p.o.r.	<CFS>	<DATABASE>	<OBQ>		[f state w and datatype snot]		[list]			[table]
SNOTEL archival database /S2K	104	var	hist	spl		p.o.r.									
SNOTEL database /CFS	105	table	curr	daily		Oct-Sep	<CFS>	<DATABASE>	<WYSNO>	<WYSQ>	[find MT. BALDY]			[list]	[table]
SNOTEL annual data summary	106	table	prev	y		Oct-Sep	<CFS>	<PRODUCTS>	<ADS>	<SNOT>					
SNOTEL annual data summary	107	table	prev	y		Oct-Sep	ADS	publ.							
SNOW Data Site Map	108	map	prev	y		Oct-Sep	ADS	publ.							
SNOTEL site location info.	109	table	hist	spl			<CFS>	<DATABASE>	<FLIP>						
SNOTEL site loc. & sensor hist.	110	table	hist	spl	p.o.r.		<CFS>	<DATABASE>	<SLIP>		[find state = w]				
SNOTEL daily update report	111	table	curr	daily		Oct-Sep	<CFS>	<PRODUCTS>	<UPDATE>		[state/basin]				
SNOTEL end of month data	112	table	curr	n		Oct-Sep	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<ANAL>	<SNOW>	
SNOTEL graphics	113	graph	curr	daily		Oct-Sep	<CFS>	<DATABASE>	<WYSNO>	<GROSS>					
Snow Course data, monthly	114	table	curr	n		Oct-Sep	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<DATA>	<SNOW>	
Snow Course data, comparison	115	table	curr+	n		Oct-Sep+	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<DATA>	<SNOW>	<LO>
Snow Course data, basin	116	table	curr+	n		Oct-Sep+	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<ANAL>	<LOST>	
Snow Course data, basin	117	table	curr+	n		Oct-Sep+	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<ANAL>	<LOSS>	
Snow Course data, basin Z	118	table	curr+	n		Oct-Sep+	<CFS>	<PROGRAMS>	<WYFOR>	<COMB>	[STATE]	(01/15)	<ANAL>	<LOSS>	
Snow Course hist. database	119	table	hist	y	p.o.r.	<CFS>	<DATABASE>	<OBQ>		[find state et and datatype snow]		[list]		[table]	

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) OR DATABASE (OBQ) EXAMPLE QUERY

***** 10/87

PRODUCT	DESCR.	FORM CODE	WATER YEAR	UPDATE PERIOD	REPORT PERIOD	SOURCE/ (COMMAND)	SOURCE/ (COMMAND)	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>	<(COMMAND)>
SNOW															
Snow Course probability anal.	120	table	hist	y	p.o.r	(CFS)	<DATABASE>	<DBQ>	[find state id and datatype snow]	[list]	[colsum]				
Snow Course probability anal.	121	table	hist	y	p.o.r	(CFS)	<DATABASE>	<DBQ>	[find state or and datatype snow]	[list]	[index]				
Snow Course field location	122	table	hist	spl		(CFS)	<DATABASE>	<FLIP>							
Snow Course Annual Data Summ.	123	table	prev	y	Oct-Sep	(CFS)	<PRODUCTS>	<ADS>	<SWE>						
Snow Course Annual Data Summ.	124	table	prev	y	Oct-Sep	ADS	publ.								
Snow Course site map.	125	map	prev	spl	Oct-Sep	ADS	publ.								
Snow Course data, monthly	126	table	curr	n	Jan-Jun	WSDR	publ.								
Mountain Snowpack graph	127	graph	curr+	n	Jan-Jun	WSDR	publ.								
Mountain Snowpack basin anal.	128	table	curr+	n	Jan-Jun	WSDR	publ.								
Snowpack general narr. by state	129	narr	curr	n	Jan-Jun	WSDR	publ.								
Snowpack condition, narr. state	130	narr	curr	n	Jan-Jun	WSDR	publ.								
Watershed snowpack analysis	131	table	curr+	n	Jan-Jun	(CFS)	<PRODUCTS>	<WSOR>	<REPBD>						
SNDTEL graphics -p.o.r	132	graph	curr+	daily	p.o.r	(CFS)	<DATABASE>	<GRAPHICS>	<COMP>						
Snow Course graphics, hist.	133	graph	hist	n	p.o.r	(CFS)	<DATABASE>	<GRAPHICS>	<SNOBAR>						
Snowpack -Fall Report	134	var	curr	spl	Oct-Sep	publ.									
Snow course site location	135	table	hist	spl	p.o.r	(CFS)	<DATABASE>	<DBQ>	[find state co and datatype snow]	[list]					
SNDTEL hist data conversion	136	table	hist	spl	p.o.r	(CFS)	<DATABASE>	<DBQ>	[find state nevada and datatype snot] (snosum)						

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) OR DATABASE (DBQ) EXAMPLE QUERY

***** JD/B7

PRODUCT	DESCR.	FORM CODE	WATER YEAR	UPDATE PERIOD	REPORT PERIOD	SOURCE/ <COMMAND>	SOURCE/ <COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>
PRECIPITATION															
SNOTEL computer, daily values	200	table	curr	daily	Oct-Sep	<RE>									
SNOTEL (CFS), daily values	201	table	curr	daily	Oct-Sep	<CFS>	<PRODUCTS>	<OSRE>							
SNOTEL (CFS), daily by state	202	table	curr	daily	Oct-Sep	<CFS>	<PRODUCTS>	<UPDATE>							
SNOTEL computer / CFS daily	203	table	curr	daily	Oct-Sep	<CFS>	<PRODUCTS>	<CALLHP>							
SNOTEL (CFS) database	204	table	curr	daily	Oct-Sep	<CFS>	<DATABASE>	<NYSO>	[find MT. BALDY]	[list]	[table]				
SNOTEL archival S2K	205	table	hist	y	p.o.r										
SNOTEL / NWS gage location	206	table	curr	spl	spl	<CFS>	<DATABASE>	<FLIP>							
SNOTEL -site hist. database	207	table	hist	spl	spl	<CFS>	<DATABASE>	<SLIP>	[find sitename = az and sen = 1]						
SNOTEL -site location	208	table	hist	spl	spl	<CFS>	<DATABASE>	<OBO>	[find sitename MT. BALDY]	[list]	[table]				
SNOTEL (CFS) hist. database	209	var.	hist	spl	p.o.r	<CFS>	<DATABASE>	<DBO>	[find sitename "MT HOOD TEST SITE"]	[list]	[table]				
SNOTEL annual data summary	210	table	hist	y	Oct-Sep	AOS	publ.								
SNOTEL 25 yr. gage data	211	table	hist	y	Oct-Sep	AOS	publ.								
SNOTEL ann. data summary- CFS	212	table	hist	y	Oct-Sep	<CFS>	<PRODUCTS>	<AOS>	<PREC>						
SNOTEL 25 yr. gage data - CFS	213	table	hist	y	Oct-Sep	<CFS>	<PRODUCTS>	<AOS>	<PREC_AVG>						
SNOTEL / NWS prec. gage map	214	map	hist	y	Oct-Sep	AOS	publ.								
NWS monthly, by state	215	table	curr	n	Oct-Sep	<CFS>	<PROGRAMS>	<NYFOR>	<COMB>	[STATE]	<O1/IS>	<DATA>	<PREC>	<LD>	
NWS eonthly, comparison /state	216	table	curr	n	Oct-Sep	<CFS>	<PROGRAMS>	<NYFOR>	<COMB>	[STATE]	<O1/IS>	<DATA>	<PREC>	<LD>	
NWS std. period avg. by state	217	table	hist	e	Oct-Sep	<CFS>	<PROGRAMS>	<NYFOR>	<COMB>	[STATE]	<O1/IS>	<DATA>	<PREC>	<LI->	
NWS basin coepar.	218	table	curr	n	Oct-Sep	<CFS>	<PROGRAMS>	<NYFOR>	<COMB>	[STATE]	<O1/IS>	<ANAL>	<BSPR>		
NWS basin, hist. vs. curr	219	table	curr	n	Oct-Sep	<CFS>	<PROGRAMS>	<NYFOR>	<COMB>	[STATE]	<O1/IS>	<ANAL>	<BAPR>		

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) OR DATABASE (OBO) EXAMPLE QUERY

***** 10/A7

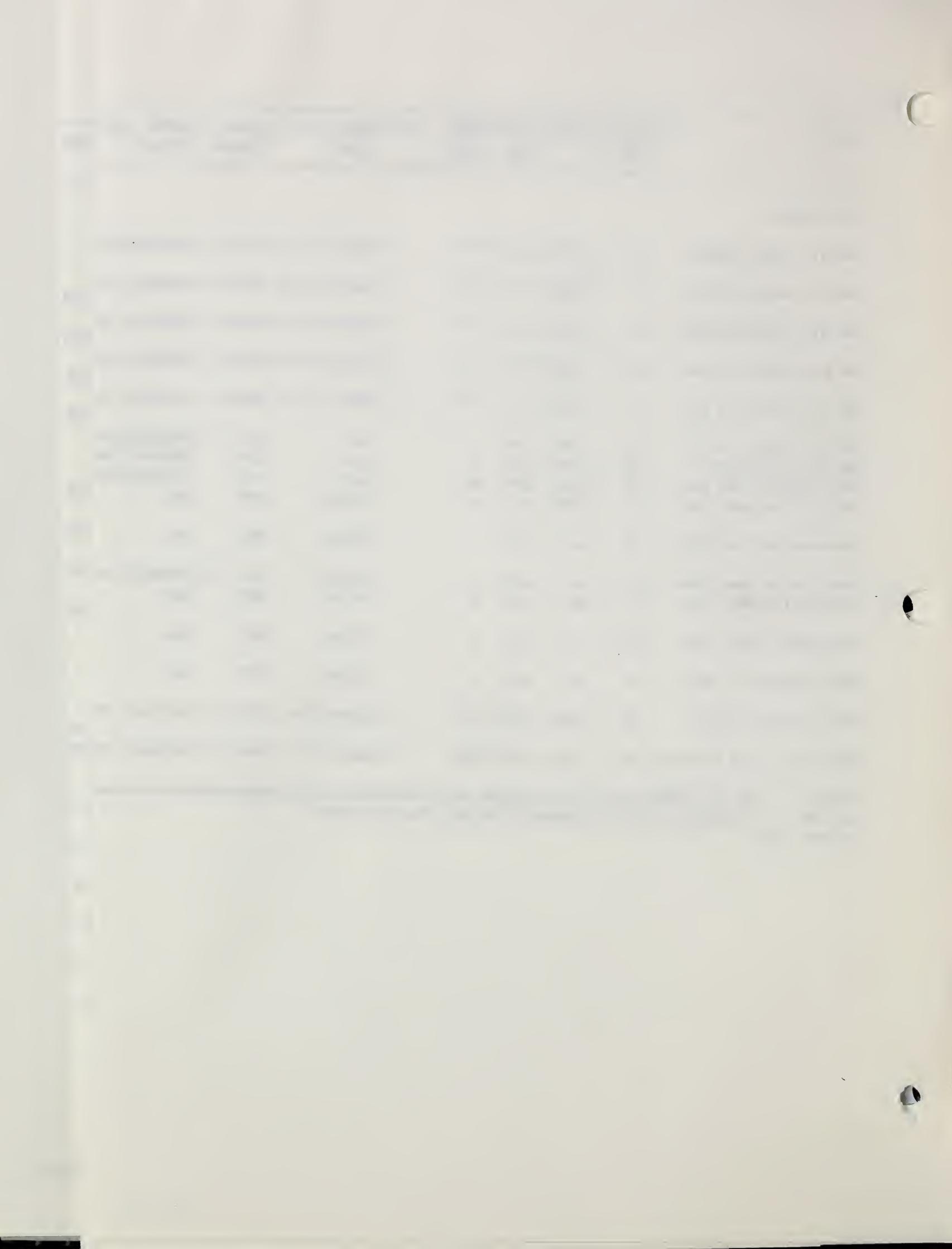


PRODUCT	DESCR. CDDE	FORM CDDE	WATER YEAR	UPDATE PERIOD	REPORT PERIOD	SOURCE/ <COMMAND>	SOURCE/ <COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>
PRECIPITATION														
NWS hist. values -monthly	220	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[if state co and datatype prec]	[list]	[table]			
NWS hist. monthly -132 col.	221	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[if state co and datatype prec]	[list]	[table132]			
NWS hist. CLIMATE stations	222	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[if state co and datatype clim]	[list]	[table]			
NWS hist. CLIMATE sta. anal.	223	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[if state id and datatype clim]	[list]	[taps]			
NWS hist. probability anal.	224	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[if sitename "coeur d'alene r s"]	[list]	[column]			
NWS hist. graphics, monthly	226	graph	hist	y	p.o.r	<CFS>	<DATABASE>	<GRAPHICS><MONTHLY>						
NWS hist. graphics, daily	227	graph	hist	y	p.o.r	<CFS>	<DATABASE>	<GRAPHICS><DAILY>						
SWDTEL/NWS water year graph	228	graph	curr+	spl	p.o.r	<CFS>	<DATABASE>	<GRAPHICS><COMP>						
Monthly, state basin graph	229	graph	curr	n	Oct-Jun	MSDR	publ.							
State-wide narr. description	230	narr	curr	n	Oct-Jun	MSDR	publ.							
State-wide narr. description	231	narr	curr	a	Oct-Jun	<CFS>	<PRODUCTS>	<MSDR>	[SLUGLINE]					
Western states monthly map	232	map	curr	a	Oct-May	WEST	publ.							
Western basin monthly narr.	233	narr	curr	a	Oct-May	WEST	publ.							
Western states narr. descr.	234	narr	curr	a	Oct-May	WEST	publ.							
Precip. station location.	235	table	hist	y	p.o.r	<CFS>	<DATABASE>	<DBQ>	[find state ut and datatype prec]	[list]				
SWDTEL precip. unit conversion	236	table	hist	spl	p.o.r	<CFS>	<DATABASE>	<DBQ>	[find state ut and datatype prec]	[nosuel]				

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) DR DATABASE (DBQ) EXAMPLE QUERY

***** ID/B7



PRODUCT	DESCR. CODE	FDRM YEAR	WATER PERIOD	REPORT PERIOD	SOURCE/ (COMMAND)	SOURCE/ (COMMAND)	COMMAND	COMMAND	COMMAND	COMMAND	COMMAND	COMMAND	COMMAND
STREAMFLOW / FDRECAST													
Observed, Combined State	3D0	table	curr	•	Jan-Jun	<CFS>	<PROGRAMS> <WYFDR>	<CDMB>	[STATE]	[D1/15]	<DATA>	<STRM>	
Observed, std. period avg.	3D1	table	curr	•	Jan-Jun	<CFS>	<PROGRAMS> <WYFDR>	<CDMB>	[STATE]	[D1/15]	<DATA>	<STRM>	
Observed, State Basin	3D2	table	curr	•	Jan-Jun	<CFS>	<PROGRAMS> <WYFDR>	<COMB>	[STATE]	[D1/15]	<DATA>	<STRM>	<LO>
Forecast Coordinated values	3D3	table	curr	•	Jan-Jun	<CFS>	<PROGRAMS> <WYFDR>	<CDMB>	[STATE]	[D1/15]	<FCDR>		
Forecast Coordinated values	3D4	table	curr	•	Jan-Jun	<CFS>	<PRODUCTS> <WSDR>	<REPBD>					
Forecast Narrative, State	3D5	narr	curr	•	Jan-Jun	<CFS>	<PRODUCTS> <WSDR>	<REPBD>		[SLUGLINE]			
Forecast Narrative, State	3D6	narr	curr	•	Jan-Jun	<CFS>	<PRODUCTS> <WSDR>	<REPBD>					
Forecast Map, State	3D7	map	curr	•	Jan-Jun	WSDR	Publ.						
Forecast point location	3D8	table				<CFS>	<DATABASE> <FLIP>						
Historical Volume Data	3D9	table	hist	spl	p.o.r	<CFS>	<DATABASE> <DBQ>		[if state nv and datatype str]	[list]	[table]		
Historical Volume Analysis	3D10	table	hist	spl	p.o.r	<CFS>	<DATABASE> <DBQ>		[find state az and datatype str]	[list]	[column]		
Historical Volume Analysis	3D11	table	hist	spl	p.o.r	<CFS>	<DATABASE> <DBQ>		[find state nm and datatype str]	[list]	[index]		
Western states outlook	3D12	narr	curr		Jan-May	WEST	Publ.						
Western states forecast	3D13	table	curr		Jan-May	WEST	Publ.						
Western states forecast map	3D14	map	curr		Jan-May	WEST	Publ.						
Historical volume -USES	3D15	var.	hist		p.o.r	MATS							
Historical vol., Graphics	3D16	graph	hist	spl	p.o.r	<MONTHLY>							
Fall Report, State	3D17	var.	curr	spl	Oct-Sep	SCS	Publ.		[find state or and datatype str]	[list]			
Streamgage location	3D18	table	hist	spl	p.o.r	<CFS>	<DATABASE> <DBQ>						

***** () CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) DR DATABASE (DBQ) EXAMPLE QUERY

***** ID/87



PRODUCT	DESCR.	FORM	WATER YEAR	UPDATE PERIOD	REPORT PERIOD	SOURCE/ <COMMAND>	SOURCE/ <COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>
	CODE					<COMMAND>	<COMMAND>							
RESERVOIR														
Monthly storage, CFS	400	table	curr	n	Oct-Sep	<CFS>	<PROGRAMS> <WYFOR>	<COMB>	[STATE]	<01/15>	<DATA>	<RESV>		
Monthly storage averages, CFS	401	table	curr+	n	Oct-Sep	<CFS>	<PROGRAMS> <WYFOR>	<COMB>	[STATE]	<01/15>	<DATA>	<RESV>	<LI->	
Monthly storage compar, CFS	402	table	curr+	n	Oct-Sep	<CFS>	<PROGRAMS> <WYFOR>	<COMB>	[STATE]	<01/15>	<DATA>	<RESV>	<LO>	
Monthly storage basin, CFS	403	table	curr+	n	Oct-Sep	<CFS>	<PROGRAMS> <WYFOR>	<COMB>	[STATE]	<01/15>	<ANAL>	<BAR>		
Location information, state	404	table	hist	spi	Oct-Sep	<CFS>	<DATABASE> <FLIP>							
Historical storage values	405	table	hist	y	p.o.r	<CFS>	<DATABASE> <OBQ>		[find state wa and datatype resv]	[list]	[table]			
Historical storage values anal.	406	table	hist	y	p.o.r	<CFS>	<DATABASE> <OBQ>		[find state nm and datatype resv]	[list]	[column]			
Historical stor. values graph.	407	graph	hist	y	p.o.r	<CFS>	<DATABASE> <GRAPHICS> <MONTHLY>							
Historical storage 132 col.	408	table	hist	y	p.o.r	<CFS>	<DATABASE> <OBQ>		If state ut and datatype resv	[list]	[table132]			
Site location information	409	table	hist	y	p.o.r	<CFS>	<DATABASE> <OBQ>		[f state my and datatype resv]	[list]				
Storage vol., monthly, state	410	table	curr	n	p.o.r	WSOR	publ.							
Storage condition, state narr.	411	narr	curr	n	Oct-Jun	<CFS>	<PRODUCTS> <WSOR>	<REPBO>						
Storage condition, state basin	412	table	curr	n	Oct-Jun	WSOR	publ.							
Storage condition, state basin	413	table	curr	n	Oct-Jun	<CFS>	<PRODUCTS> <WSOR>	<REPBO>						
Storage condition, west states	414	graph	curr+	n	Oct-May	WEST								
Storage condition, state	415	table	curr+	y	Oct	FALL								
State Fall Report	416	table	hist	y	Oct	FALL								

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) OR DATABASE (OBQ) EXAMPLE QUERY

***** 10/87

PRODUCT	DESCR. CODE	FORM YEAR	MATER PERIOD	UPDATE PERIOD	REPORT PERIOD	SOURCE/ (COMMAND)	SOURCE/ (COMMAND)	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>	<COMMAND>
TEMPERATURE															
SNOWTEL computer, daily values	500	table	curr	daily		Oct-Sep	<RE>								
SNOWTEL / CFS daily values	501	table	curr	daily		Oct-Sep	<CFS>	<DATABASE> <NYSNO>	<DGRE>						
SNOWTEL comp. access through CFS	502	table	curr	daily		Oct-Sep	<CFS>	<DATABASE> <WYSNO>	<CALLHP>						
SNOWTEL / CFS data	503	table	curr	daily		Oct-Sep	<CFS>	<DATABASE> <NYSNO>	<NYSQ>	[find MT. BALOY]					[table]
SNOWTEL / CFS site location	504	table	curr	spl			<CFS>	<DATABASE> <FLIP>							
SNOWTEL site / sensor database	505	table	hist	spl		p.o.r	<CFS>	<DATABASE> <SLIP>							
SNOWTEL site location map	506	map	curr	y		Oct-Sep	AOS	publ.							
SNOWTEL graphics curr. + prev.	507	graph	curr	daily		Oct-Sep	<CFS>	<DATABASE> <NYSNO>	<GROSS>						
SNOWTEL archival database, S2K	508	table	hist	daily		p.o.r									
SNOWTEL historical database	509	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[find state wa and datatype snat]	[list]			[table]	
NOAA Climate Station	510	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[f state wa and datatype clim]	[list]			[table]	
NOAA Climate Station location	511	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[f state wy and datatype clim]	[list]				
NOAA Climate Station analysis	512	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[f state mt and datatype clim]	[list]			[frost]	
NOAA Climate Station analysis	513	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[f state ut and datatype clim]	[list]			[taps]	
NOAA Climate Station graphics	514	graph	hist	daily		p.o.r	<CFS>	<DATABASE> <GRAPHICS> <DAILY>							
NOAA Climate Station analysis	515	table	hist	daily		p.o.r	<CFS>	<DATABASE> <OBQ>		[f state ca and datatype clim]	[list]			[growth]	

***** < > CFS MENU COMMAND subsequent menu commands may be concatenated (strung together) from current menu when separated by blanks.

***** [] CFS DISPLAYED OPTION (not command) OR DATABASE (OBQ) EXAMPLE QUERY

***** 10/87

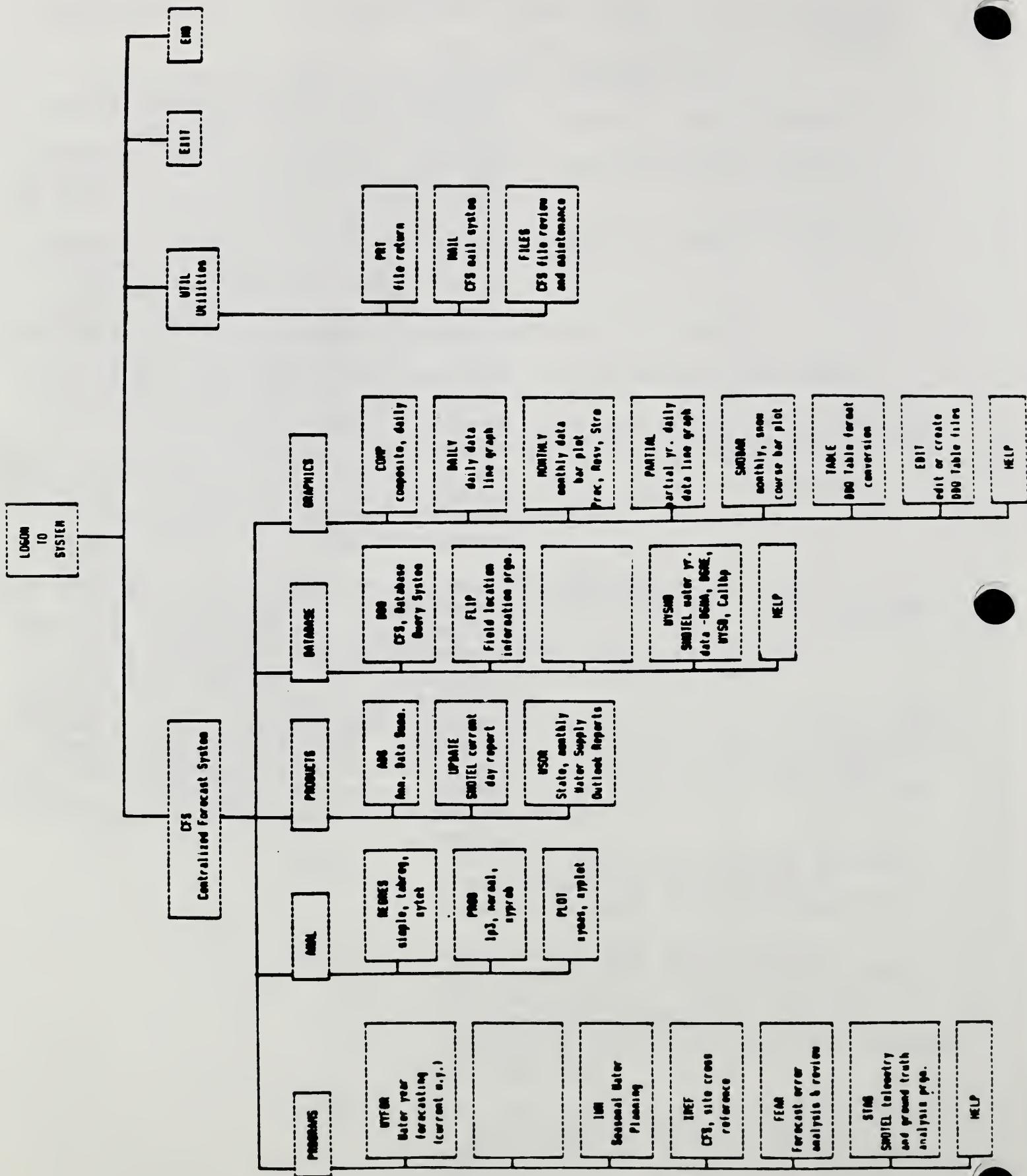
WATER SUPPLY PRODUCT SPREADSHEET SYMBOLS KEY

ITEM HEADING	CODE	MEANING
FORM	Table	Tabular format, may be computer generated to computer screen or printer, or may be part of standard publication.
	Narr	Information presented in narrative format, typical of water supply reports. Narrative format typically very general in nature.
	Graph	Information presented in graphic format. Usually requires some familiarity with hydrologic terms and graph interpretation.
	Map	Information is presented via a map of a state, basin, or watershed. Map scales usually small. Shows overall general water supply conditions.
	Var.	Multiple formats available from agency or option selected.
DESCRIPTION CODE	Number	A three digit number which refers to the Water Supply Forecast Product description reference section. Note that descriptions are located by CODE # and not by page number!
WATER YEAR	Curr	Current water year. Water years run from October 1 through September 30
	Curr+	Current water year plus reference to previous water year(s).
	Prev	Water year prior to current water year.
	Hist	Historic or previous water year(s)

UPDATE PERIOD	(Product update periodicity or availability)
daily	Updated daily (most data are thus provisional).
m	Monthly (usually end of month).
spl.	Special (non-scheduled) update period.
y	Updated annually (usually end of water year).
REPORT PERIOD	(Time interval covered by report)
Oct-Sep	Report covers months Oct.-Sept.
p.o.r.	Report or table includes all period of record data available within CFS.
spl	Special (non standard schedule) report period.
SOURCE	
ADS	Snow Survey Program publication - "Annual Data Summary". Data resides on CFS minicomputer. Published by state near the first of the succeeding calendar year.
FALL	SCS, State Snow Survey Program, "FALL REPORT". Optional report, published by state in the fall of the year. Report is not accessible on the CFS minicomputer.
WATS	USGS WATSTORE minicomputer product accessible from that agency. Requires a user I.D. and password.
WEST	Joint SCS / NWS water supply publication for the western states. The publication, "Water Supply Outlook for the Western United States" is published monthly, January through May.
WSOR	SCS, Snow Survey Program publication - "Water Supply Outlook Report". Published monthly, January through June.

COMMAND

- <COMB> Spreadsheet items within angle brackets represent CFS menu items which are selected from each successive menu in order to access the required product. In virtually every case, the CFS displays easy to read menus from which these selections can be entered. However, CFS incorporates a special feature which allows the user to quickly access the desired product without having to respond to each successive menu. From the current menu, the user can enter the appropriate menu selections from several subsequent menus by referring to the spreadsheet. All of the menu choices can be entered on a single line (each separated by blank spaces). When the carriage return is depressed, the subsequent menus will be bypassed.
- [STATE] Spreadsheet items within brackets are not always commands which are entered from the keyboard. When the appropriate time comes for this selection, the user will see a CFS display which refers to the item in brackets and may enter the necessary response. Some spreadsheet items within brackets are examples of CFS database command lines which could be entered to obtain the requested product.







IV. REFERENCE DESCRIPTION CODE SECTION

The following section is divided into 5 major components according to the major CFS data types; snow course, precipitation, reservoir, streamflow, and climate. Each page has a DESCRIPTION CODE NUMBER at the top. Note that these numbers are not to be confused with page numbers. Each data type has been assigned a series of numbers in increments of one hundred. For example, all pages which describe snow related information are coded within numbers 100 to 199. Those describing precipitation related information have been assigned numbers 200 through 299 and so on. These increments have been made large enough to allow for future additional water supply related product descriptions so that the reference can be amended easily.

Please refer to Section III, CFS, Products Access Spreadsheet Introduction for more information about use of this section.



Keyname:SNOTEL data -current water year.
 Source:SNOTEL minicomputer - WNTC
 CFS menu path:(SNOTEL Computer).
 Menu options:RE , NA

DESCRIPTION:

 Computer generated report for SNOTEL sites - current water year,
 -generated by user. Report format can be stored with "NA"
 command. SNOTEL sites report in daily (by about 9:AM PST).
 Current water year SNOTEL data is stored on-line. SNOTEL daily
 data reports can also be accessed through the CFS where more
 access telephone lines are available. SNOTEL sensor data of CFS
 is limited to precipitation, snow water equivalent, and
 temperature.

EXAMPLE:

 7/14/78 8:05
 DATA REPORT FOR COOP
 NAME : LAST 10
 TIME : LAST 10 DAYS
 NOTE:ALL DATA IN ENGINEERING UNITS (IN TENTHS XXX.X)
 EXCEPT DATA MARKED 'N' WHICH IS A STRAIGHT VOLTAGE READING

 REMOTE SITE NAME ELEVATION
 ***** *****
 MM/DD/YY HH:MM BATT SNOW RAIN AIR

 MOSQUITO RIDGE EL: 10100
 ***** *****
 7/ 6/78 14:16 127V 12V 123V 159V
 7/ 6/78 18: 3 127V 12V 123V 199V
 7/ 7/78 5:43 124V 14V 125V 104V
 7/13/78 10:23 129V 10V 125V 114V
 :24 132V 12V 125E 118V
 % OF AVERAGE 85.2% 103.0%

 ABOVE BURKE

 7/ 5/78 4:55 119V 56V 101V 120V
 7/ 5/78 12:58 120V 55V 101V 120V
 % OF AVERAGE 102.5% 88.0%

 LONE PINE EL: 9500

 NO ON-LINE DATA

 BIG BOULDER CREEK EL: 10500

 7/ 5/78 4:55 123V 172V 100V 118V
 7/12/78 12:39 124V 175V 104V 115V
 7/13/78 10:30 126V 172V 106V 114V
 7/14/78 5:30 129V 172V 106E 100V
 % OF AVERAGE ??.% ??.%

CODE: 101

Keyname: SNOTEL daily data -CFS minicomputer.
Source: CFS
CFS menu path: CFS, DATABASE, WYSNO
Menu options: DGRE, DGNA

DESCRIPTION:

User selected, current water year, SNOTEL site report (similar to SNOTEL computer RE and NA reports). User selects sitenames and time period for report. SNOTEL data is unedited for the current and last 15-20 days. SNOTEL daily data is transferred to CFS from the SNOTEL computer after approximately 9:AM PST, each day. User may store the report format for reuse using the DGNA option.

EXAMPLE:

**United States Soil West National Technical Center
Department of Conservation Water Supply Forecasting Staff
Agriculture Service Portland, OR**

SNOTEL DATA REPORT

~~** Provisional data, subject to revision. It~~

09/17/87 09:36 PST

Site Name	MM/DD (PST)	Water Content	Precip (YTD)	AM Temp	Max	Min	Avg
MT_HOOD_TEST_SITE	08/16 0456	- 0.2	79.7	33	42	36	40
	08/17 0603	0.0	79.7	39	48	32	39
SANTIAM_JCT	08/16 0452	- 0.3	55.2	42	63	46	51
	08/17	** no report **					

** Provisional data, subject to revision.*

- > Precip(YTD) - 10/1/86 to date.
 - > Water Content and Precipitation is recorded in Inches.
 - > Temperature data recorded in degrees Fahrenheit.
 - > Current days SNOTEL data posted after 8:30 PST daily.

CODE:102

Keyname:SNOTEL computer access through CFS.
Source:CFS
CFS menu path:CFS, DATABASE, WYSNO.
Menu options:CALLHP

DESCRIPTION:

There are numerous telephone ports available for access to the CFS while only two are available to cooperators on the SNOTEL computer. Users can dial onto CFS and call up the SNOTEL computer through a dedicated link between the two systems. CallHP provides the link to SNOTEL and users can request standard SNOTEL reports from that computer once the link is established. Users must have an understanding of SNOTEL computer queries.

EXAMPLE:

8/17/87 9:22

TEKTRONIX REPORT FOR ARO4

TIME : LAST 2 DAYS
TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED 'NN' IS A STRAIGHT VOLTAGE READING

SENS 1 SENS 2 SENS 3 SENS 4 SENS 5 SENS 6 SENS 7 SENS 8 SENS 9 SENS 10 SENS 11 SENS 12 SENS 13 SENS 14 SENS 15 SENS

MT HOOD TEST SITE

DATE	TIME	#	BATT	LV15	RH20	TMCC	LAN1	LAN2	DUM7	DUM8	DUM9	DM10	TMAC	TMIC	TAVC
8708160456	1		12.0VV-	0.2VV	79.7VV	1.0VV	22.4VV	0.0VV	NNN	NNN	NNN	NNN	5.7VV	2.3VV	4.6VV
8708170603	1		11.9VV	0.0VV	79.7VV	4.4VV	21.8VV	0.0VV	NNN	NNN	NNN	NNN	9.4VV	0.2VV	4.3VV

SANTIAM JCT.

DATE	TIME	#	BATT	LV10	RH15	TMCC	LAN1	LAN2	DUM7	DUM8	DUM9	DM10	TMAC	TMIC	TAVC
8708160452	1		12.4VV-	0.3VV	55.2VV	6.0VV	21.9VV	0.0VV	NNN	NNN	NNN	NNN	17.6VV	8.0VV	11.1VV
8708170600	1-	99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9	- 99.9

LAST 2 DAYS

TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED 'NN' IS A STRAIGHT VOLTAGE READING

CODE:103

Keyname: SNOTEL - CFS historic database
Source:CFS
CFS menu path:CFS, DATABASE, DBQ
Menu options:TABLE, CARDS, PRELUDE.

DESCRIPTION:

Previous water year (prior to Oct. 1), period of record, SNOTEL telemetered sensor values including pillow (snow water equivalent) and cumulative precipitation. SNOTEL values are daily values (one value per day). TABLE format (shown) is a human readable format. A CARDS format is also provided for machine manipulation of data.

EXAMPLE: /cfs/cfs/data/snotel 84 pill

Station : 21D005, MT HOOD TEST SITE

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
1	0.0	0.0	13.4	28.0	33.4	46.4	60.6	70.8	67.4	41.5	0.0	0.0
2	0.0	0.0	13.2	28.4	33.4	47.1	60.9	71.9	66.5	39.3	0.0	0.0
3	0.0	0.0	13.8	28.2	33.5	47.5		72.6	65.3	37.2	0.0	0.0
4	0.0	0.5		27.0	33.5	47.6	61.1	72.8	64.8	34.8	0.0	0.0
5	0.0	0.7	14.7	26.7	33.5	47.6	61.2	73.7	64.8	32.5	0.0	0.0
6	0.0		16.6	26.7	33.7	47.6	61.9	74.8	64.3	30.2	0.0	0.0
7	0.0	1.1		26.7	33.8	47.8	62.2	74.8	65.2	28.2	0.0	0.0
8	0.0	1.5	18.3	27.2	33.9	47.8	63.3	74.5	65.9	26.3	0.0	0.0
9	0.0	1.6	19.0	27.1	34.0	48.1	63.9	74.6	66.1	24.5	0.0	0.0
10	0.0	1.8	19.6	27.1	34.5	48.0	65.2	75.0	66.5	22.3	0.0	0.0
11	0.0	1.3	20.1	28.2	35.1	48.8	66.4	75.2	66.1	20.1	0.0	0.0
12	0.0	1.5	20.3	28.2	36.3	49.0	67.4	75.5	65.4	18.1	0.0	0.0
13	0.0		22.3	28.1	37.3	49.5	68.1	74.8	65.1	15.9	0.0	0.0
14	0.0	2.1	24.1	28.0	38.8	50.0	68.1	74.5	64.5	13.7	0.0	0.0
15	0.0	2.6	24.8	28.0	39.6	50.8	68.1	74.2	63.1	11.2	0.0	0.0
16	0.0	2.7	25.0	28.0	40.0	51.2	67.5	74.5	61.6	8.1	0.0	0.0
17	0.0	3.3	25.0	28.0	40.2	52.0	67.0	74.3	60.4	4.0	0.0	0.0
18		4.8	25.0	28.0	40.2	52.6	66.9	74.2	58.9	0.1	0.0	0.0
19		5.8	25.5	28.0	40.2	53.6	67.1	74.2	57.4	0.0	0.0	0.0
20		7.3	26.0		40.7	54.0	67.7	74.2	55.9	0.0	0.0	0.0
21			26.5	28.2	41.3	54.4	67.8	73.9	56.1	0.0	0.0	0.0
22		7.8	26.5		42.3	55.3	67.9	73.4	55.6	0.0	0.0	0.2
23		8.1	26.5	30.9	43.0	55.3	67.9	73.9	54.2	0.0	0.0	0.7
24		10.2	26.5	33.5	43.6	56.2	68.1	73.5	51.6	0.0	0.0	0.7
25		11.0	26.5	33.9	45.0	56.3	68.9	73.3	49.4	0.0	0.0	0.7
26		12.1	26.5	33.9	45.7	58.4	69.3	73.9	47.5	0.0	0.0	0.6
27		12.9	26.5	33.9	45.7	59.1	69.3	73.1	46.9	0.0	0.0	0.5
28	0.0	13.0	26.5	33.7	45.8	59.4	69.3	71.9	44.8	0.0	0.0	0.2
29	0.0	13.4	26.6		46.0	60.3	69.8	69.7	43.1	0.0	0.0	0.2
30	0.0	13.4	29.0	33.6	---	60.3	70.2	67.6	42.7	0.0	0.0	0.1
31	0.0	---	27.7	33.5	---	60.4	---	67.6	---	0.0	0.0	---
mean	0.0	5.2	22.8	29.3	38.8	52.3	66.3	73.3	58.9	13.2	0.0	0.1
max	0.0	13.4	29.0	33.9	46.0	60.4	70.2	75.5	67.4	41.5	0.0	0.7
min	0.0	0.0	13.2	26.7	33.4	46.4	60.6	67.6	42.7	0.0	0.0	0.0

CODE:104

Keyname:SCS, Snow Survey Program, SNOTEL, ARCHIVAL DATABASE
Source:FCCC (Fort Collins Computer Center -S2K)
CFS menu path:
Menu options:

DESCRIPTION:

USDA, SCS, archival database for all (period of record) SNOTEL sensor values -one value per sensor per day. This database provides numerous report formats as prescribed by the user query. For information regarding access and use of the SNOTEL archival database contact the Water Supply Forecasting Staff at the SCS WNTC, Portland, Oregon.

EXAMPLE:

TEKTRONIX REPORT

TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED "NN" IS A STRAIGHT VOLTAGE READING

		SNOW	PREC	TEMP	TMAX	TMIN	TAVG
BATEMAN (WY 84)							

DATE	TIME	SNOW	PREC	TEMP	TMAX	TMIN	TAVG
831001		.0	.6	3.5	.0	.0	.0
831002		.0	.6	.5	.0	.0	.0
831003		.0	.6	-2.1	.0	.0	.0
831004		.0	.6	-2.4	.0	.0	.0
831005		.0	.6	1.2	.0	.0	.0
831006		.0	.6	.6	.0	.0	.0
831007		.0	.6	.7	.0	.0	.0
831008		.0	.6	1.1	.0	.0	.0
831009		.0	1.1	.3	.0	.0	.0
831010		.0	1.1	2.1	.0	.0	.0
831011		.0	1.1	-1.1	.0	.0	.0
831012		.0	1.1	-4.8	.0	.0	.0
831013		.0	1.1	-3.1	.0	.0	.0
831014		.0	1.2	1.2	.0	.0	.0
831015		.0	1.2	-4.2	.0	.0	.0
831016		.0	1.2	-3.7	.0	.0	.0
831017		.0	1.2	-2.4	.0	.0	.0
831018		.2	1.3	.7	.0	.0	.0
831019		.2	1.3	1.0	.0	.0	.0
831020		.2	1.3	1.5	.0	.0	.0
831106		.2	1.6	-2.6	.0	.0	.0
831107		.2	1.6	.3	.0	.0	.0
		.					
		.					
		.					
831108		.3	1.6	-2	.0	.0	.0

Keyname: SNOTEL -CFS, Current Water Year Database.

Source:CFS

CFS menu path:CFS, DATABASE, WYSNO, WYSQ

Menu options:

DESCRIPTION:

 SNOTEL, current water year database for the following SNOTEL sensors: pillow (snow water equivalent), precipitation (in.), and temperature. This database is queried much like the CFS operational database, DBQ. Output files from WYSQ are compatible with DBQ TABLE files and may be graphed together.

EXAMPLE:

 /cfs/snotel/data/orcg 87 pill

 SNOTEL Sitename :,MT HOOD TEST SITE

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
	---	---	---	---	---	---	---	---	---	---	---	---
1	0.0	0.0	21.5	28.4	42.1	50.6	58.1	52.6	16.9	-19.3	0.1	
2	0.0	0.0	21.5	30.0	42.7	51.5	57.2	51.6	16.9	-19.3	0.2	
3	0.0	0.0	21.5	30.2	43.0	52.2	57.1	51.3	16.1	-19.3	0.4	
4	0.0	0.0	21.5	30.6	43.1	52.0	56.7	50.7	12.5	-19.3	0.2	
5	0.0	0.0	21.5	30.8	43.1	51.7	56.4	49.9	8.4	-19.5	0.0	
6	0.0	2.1	21.9	30.8	43.1	51.4	56.7	49.1	7.3	-19.6	-0.2	
7	0.0	4.6	22.0	30.8	43.1	51.5	56.8	48.5	4.4	-19.3	0.0	
8	0.0	5.6	22.0	30.8	42.9	51.6	57.4	47.7	0.6	-19.1	0.0	
9	0.0	6.4	22.0	30.9	42.7	51.9	58.0	43.9	-2.4	-19.1	-0.2	
10	0.0	6.5	21.9	31.0	42.4	52.1	58.0	40.9	-5.0	-19.1	-0.5	
11	0.0	6.5	21.8	31.0	42.1	52.2	58.7	38.6	-7.3	-19.0	-0.5	
12	0.0	6.6	22.0	31.0	42.2	53.0	59.7	36.4	-11.2	-18.9	-0.5	
13	0.0	6.7	22.1	32.1	42.8	53.6	59.8	34.8	-15.2	-19.1	-0.5	
14	0.0	6.9	22.6	33.7	43.9	54.1	59.8	33.5	-17.6	-19.3	-0.5	
15	0.0	7.1	22.8	34.3	44.3	54.7	59.3	32.0	0.0	-0.3	-0.2	
16	0.0	7.5	22.8	34.3	45.0	55.0	59.1	30.4	0.0	-0.6	-0.2	
17	0.0	11.2	22.8	34.4	46.0	55.6	58.8	29.9	0.0	-0.5	0.0	
18	0.0	11.3	22.8	34.4	46.8	56.4	59.3	29.3	0.0	-0.4		
19	0.0	13.0	23.0	34.5	47.0	56.8	59.5	27.6	0.0	-0.2		
20	0.0	13.4	23.1	34.5	47.1	57.2	59.3	27.6	0.0	0.0		
21	0.0	15.5	23.0	34.5	47.1	57.2	59.3	26.9	0.0	0.1		
22	0.0	17.1	23.0	34.5	47.4	57.2	59.1	25.8	0.0	0.0		
23	0.0	18.0	24.3	34.6	49.0	57.3	59.1	24.8	0.0	0.0		
24	0.0	18.0	24.6	35.2	49.3	57.6	59.0	23.3	0.0	0.2		
25	0.0	18.4	25.4	36.6	49.3	57.7	57.8	22.0	0.0	0.1		
26	0.0	18.8	26.0	37.9	49.3	58.0	57.1	20.6	0.0	0.1		
27	0.0	19.9	26.0	38.4	49.4	58.4	56.9	19.6	0.0	0.0		
28	0.0	21.1	26.0	38.7	49.6	58.4	56.5	18.6	0.0	0.1		
29	0.0	21.5	26.1	39.0	---	58.5	56.3	18.0	0.0	0.1		
30	0.0	21.5	27.4	39.1	---	58.6	54.2	16.6	-19.2	0.1		
31	0.0	---	27.4	39.9	---	58.5	---	15.7	---	0.0	---	
mean	.0	10.2	23.3	33.8	45.2	54.9	58.0	33.5	.2	-0.7	-.1	
max	.0	21.5	27.4	39.9	49.6	58.6	59.8	52.6	16.9	.2	.4	
min	.0	.0	21.5	28.4	42.1	50.6	54.2	15.7	-19.2	-19.6	-.5	

CODE:106

Keyname:SNOTEL - CFS, Annual Data Summary (ADS)
Source:CFS (also available as publication -see 110)
CFS menu path:CFS, PRODUCTS, ADS
Menu options: SNOT, SNOT_AVG

DESCRIPTION:

Annual summary of SNOTEL data for the first and fifteenth of the month -for the previous water year- available from CFS near the first of the calendar year. This summarization is the same as that which is available in the Snow Survey Program Annual Data Summary (ADS) publication.

EXAMPLE:

MONT SNOTEL SWE FOR WATER YEAR '86

SNOTEL		ELEV DATE												
				START	MAX	MAX	MELT	OCT	NOV	DEC	JAN	FEB	MAR	APR
SITENAME		(ft)												
MAY	JUNE	JULY	AUG	SEPT	DATE	SWE	DATE	DATE						
BADGER PASS				6900	1st	2.6	10.3	13.7	15.6	21.6	31.0	35.1	3	
3.5	16.3	.0	.0	.0										
					15th	6.5	14.7	14.3	18.8	23.5	32.2	35.4	3	
5.1	.0	.0	.0	.0	9/18	36.2	5/19	6/11						
BARKER LAKES				8250	1st	1.3	2.6	4.7	5.4	7.9	12.2	14.7	1	
7.1	9.3	.0	.0	.0										
					15th	2.3	3.5	5.3	5.8	9.2	13.9	16.1	2	
0.8	.0	.0	.0	.0	.1	9/13	20.8	5/16	6/12					
BASIN CREEK				7180	1st	.0	.0	1.3	1.7	2.9	5.0	6.2		
8.4	4.3	.0	.0	.0										
					15th	1.1	.5	1.7	2.1	4.1	6.1	7.3	1	
1.9	.0	.0	.0	.0	11/9	11.9	5/19	6/5						
BEAGLE SPRINGS				8850	1st	.0	.4	3.3	3.8	5.2	8.4	9.7	1	
0.9	.0	.0	.0	.0										
					15th	.0	1.9	3.8	4.9	6.1	9.3	10.8	1	
4.1	.0	.0	.0	.0	10/21	14.1	5/16	6/1						
BEAVER CREEK				7850	1st	.2	1.9	5.1	7.1	9.9	16.4	1		

CODE:107

Keyname:State SNOTEL site data (1st & 15th of month)

Source:Yearly Snow Survey Program publication -by state.

CFS menu path:

Menu options:

DESCRIPTION:

Publication -published yearly by state near first of January - includes previous water year 1st and 15th of month, SNOTEL data for state. Also includes SNOTEL and other snow data sites location map.

EXAMPLE:

SNOTEL SITE'S - WY 1996 (partial)

SNOTEL SITE NAME	GLC SL	DATE	SNOTEL DATA															OTHER DATA			
			1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	1st	15th	
HALO Mtn.	9375	1st 15th	3.4 6.7	5.1 6.4	7.5 10.1	13.2 15.1	16.7 18.1	21.0 22.3	23.8 24.7	26.6 28.3	17.8 18.3	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/20 9/21	28.3 29.1	5/17 5/18	6/17 6/18	
BASE CAMP	7030	1st 15th	.0 .0	.0 1.7	6.6 7.1	7.2 8.7	11.0 13.9	22.7 23.6	21.6 20.0	17.1 16.0	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	11/7 11/11	23.6 23.9	3/18 3/19	5/30 5/31	
BATTLE MOUNTAIN	7460	1st 15th	---	.0	6.6 6.1	6.0 6.7	7.0 9.1	11.1 11.6	9.2 9.8	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	11/11 11/11	11.9 11.9	3/22 3/22	6/30 6/30	
BEAR TRAP MEADOW	7900	1st 15th	1.6 1.0	1.5 2.6	3.2 3.0	4.6 5.1	5.7 6.8	7.3 7.8	8.0 7.3	2.7 2.7	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/22 9/22	8.6 8.6	3/23 3/23	5/16 5/16	
BEARTOOTH LAKE	9275	1st 15th	1.0 3.0	3.5 3.0	6.5 9.7	10.2 11.6	16.4 16.7	22.6 24.4	23.0 26.1	28.4 29.1	21.2 18.6	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/19 9/19	29.3 29.3	3/18 3/18	6/26 6/26	
BIG SANDY OPENING	9100	1st 15th	.0 1.0	3.2 7.1	9.0 9.7	9.6 10.0	11.3 12.0	---	---	---	---	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	10/6 10/6	---	---	---	
BLACKWATER	9700	1st 15th	.7 2.5	3.5 6.0	6.5 10.3	10.0 11.9	16.4 17.4	27.8 30.3	31.5 33.3	35.7 37.1	29.3 18.1	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/27 9/27	37.6 37.6	3/19 3/19	6/27 6/27	
BLIND BULL SUM	8630	1st 15th	.0 1.0	3.1 7.8	13.0 15.9	16.4 18.1	22.2 26.5	39.9 42.8	44.6 44.3	44.6 47.0	39.0 22.9	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	10/7 10/7	47.1 47.1	3/20 3/20	6/29 6/29	
BONE SPRINGS DIV	9350	1st 15th	2.0 3.5	3.9 3.2	3.8 7.0	9.0 10.1	11.5 13.3	17.1 18.4	19.6 20.3	22.0 23.6	13.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/20 9/20	23.6 23.6	3/18 3/18	6/12 6/12		
BRONELTH LAKE	10240	1st 15th	.0 3.4	6.2 8.9	14.4 18.2	20.0 20.7	23.0 26.7	30.3 33.9	36.9 39.6	39.3 38.2	18.7 2.8	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/24 9/24	40.6 40.6	4/23 4/23	6/22 6/22	
BURGESS JUNCTION	7800	1st 15th	1.5 2.1	2.0 3.0	3.7 4.7	6.8 7.2	8.0 9.2	10.3 11.8	13.0 14.2	13.7 12.6	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/20 9/20	14.5 14.5	4/20 4/20	6/1 6/1		
BURRBUCHS CREEK	8750	1st 15th	.7 1.5	2.1 3.3	3.0 6.2	6.9 8.2	9.7 11.8	20.1 20.7	20.4 19.6	17.6 16.6	4.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	10/7 10/7	20.9 20.9	3/29 3/29	6/8 6/8		
CANTON	7940	1st 15th	.0 1.0	.3 2.3	6.9 3.9	6.2 7.6	9.1 11.3	15.3 17.5	16.8 16.7	17.4 15.9	.5 .0	.0 .0	.0 .0	.0 .0	.0 .0	10/8 10/8	17.8 17.8	3/19 3/19	6/2 6/2		
CASPER MTN.	7900	1st 15th	.1 1.0	1.0 1.9	3.3 3.2	5.9 7.1	7.2 9.1	10.1 10.7	12.6 12.6	20.3 16.7	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	11/6 11/6	21.1 21.1	4/10 4/10	5/30 5/30		
CHRISTINA LAKE	9980	1st 15th	1.5 2.7	3.9 7.6	10.6 12.3	12.7 13.1	13.5 16.6	24.3 25.5	26.3 28.0	32.6 35.4	26.6 17.7	.0 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/20 9/20	33.9 33.9	3/12 3/12	6/27 6/27	
CLOUD PEAK RESERVOIR	9860	1st 15th	.7 2.4	2.0 3.9	3.7 6.3	9.0 10.1	11.0 12.4	13.3 16.6	18.6 21.1	21.9 21.7	10.3 .0	.0 .0	.0 .0	.0 .0	.0 .0	9/26 9/26	22.3 22.3	4/20 4/20	6/11 6/11		

CODE:108

Keyname: State SNOTEL and other snow data sites map.

Source: Snow Survey Program publication by state.

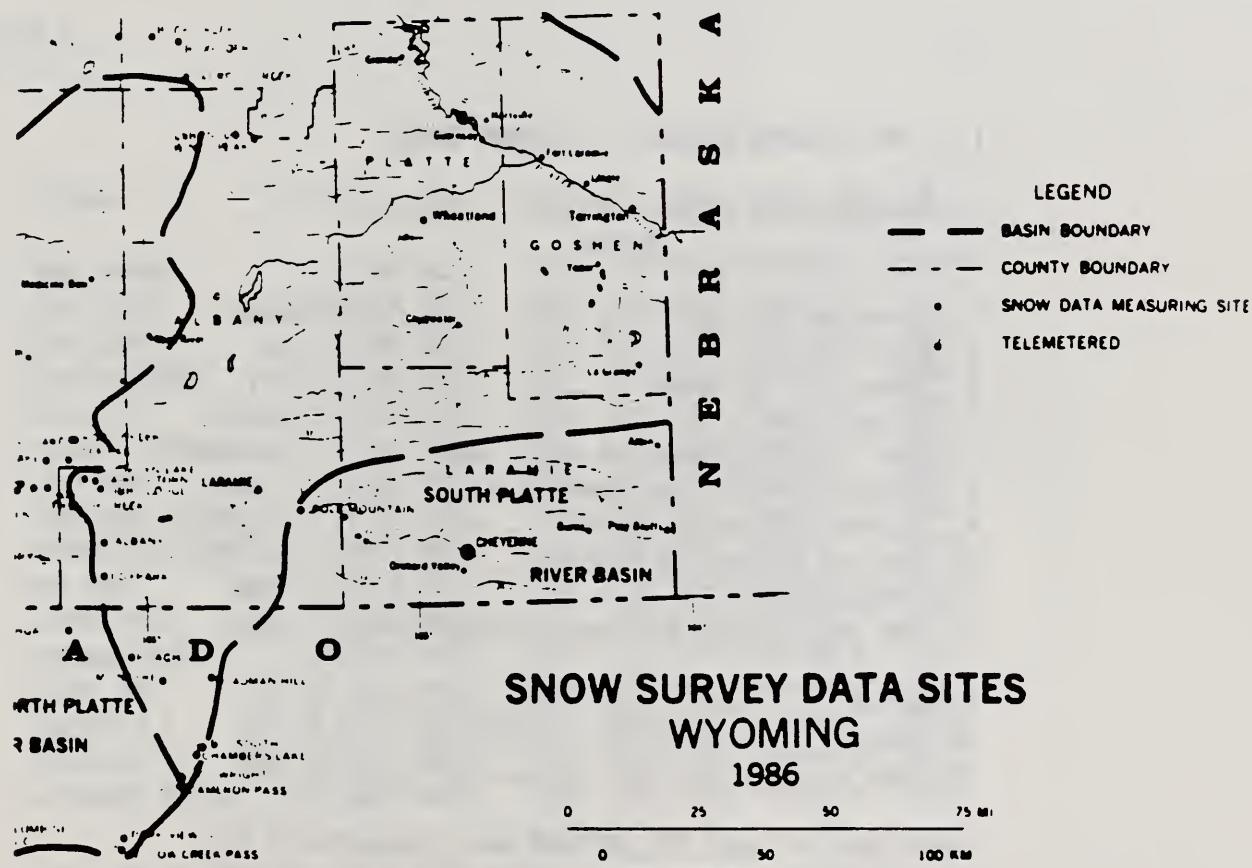
CFS menu path:

Menu options:

DESCRIPTION:

State snow data site map included with Annual Data Summary - shows location of snow courses, SNOTEL, and other snow data sites within a state by major watershed or basin.

EXAMPLE:



BASE COMPILED FROM U.S.G.S. NATIONAL ATLAS 1:1,000,000
AND WYOMING HIGHWAY MAPS. ALBERS EQUAL AREA PROJECTION.

FORMERLY 702202910 JUNE 1986 4

Keyname: SNOTEL site location information by SCS Field Office.

Source:CFS

CFS menu path:CFS, DATABASE, FLIP

Menu options:

DESCRIPTION:

CFS program provides users with location information concerning all sites stored in the operational database. FLIP was designed to relate site information to commonly recognized political boundaries such as state, county, and SCS field office jurisdiction. Users may utilize this information to assemble queries from the operational database.

EXAMPLE:

- 1. CFS DATABASE Sitename = EMIGRANT SUMMIT

2. Local SCS Field Office location(s).....
.....Preston

3. County name (or other desig.).....Franklin
4. State FIPS code.....16
5. County FIPS code number041
6. CFS Data Type.....SNOTEL
7. USGS - Hydrologic Unit Code number (HUC).....16010201
8. CFS Site Identification Number (I.D).....116065
9. Latitude (degrees and minutes).....42,22
10. Longitude (degrees and minutes).....111,34
11. Elevation (feet).....7390
12. SHEF CODE (Standard Hydrologic Exchange Format)....EMSI1

13. Section21
14. Township12S
15. Range42E

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

CODE:110

Keyname:SNOTEL Site-Location and Sensor History Information
Program
Source:CFS
CFS menu path:CFS, DATABASE, SLIP
Menu options:

DESCRIPTION:

SNOTEL site location information and sensor configuration/history, database query system.

DATA:

Allows user to query database for SNOTEL site information including sitename, state, station, SHEF code, elevation, longitude, latitude, year of site installation, and sensor configuration.

EXAMPLE:

SITENAME	STATE STA. SHEF	ELEV.	LAT.	LONG.	HUC	SEN	YR
BEAR CANYON	ID 13F03S BECI1	7900	4345	11356	17040218	2	1980
COOL CREEK	ID 15C16S COLI1	6280	4646	11518	17060305	2	1984
COZY COVE	ID 15E08S COZI1	5380	4417	11539	17050120	2	1977
CRATER MEADOWS	ID 15C09S CRAI1	5690	4634	11517	17060307	2	1984
ELK BUTTE	ID 16C15S ELBI1	5550	4650	11607	17060308	2	1982
HEMLOCK BUTTE	ID 15C06S HEMI1	5810	4629	11538	17060306	2	1983
LOLO PASS	ID 14C05S LPSI1	5240	4638	11435	17060303	2	1983
LOST-WOOD DIVIDE	ID 14F03S LWDI1	7900	4350	11416	17040218	2	1980
MOORES CREEK SUMMIT	ID 15F01S MRKI1	6100	4356	11540	17050111	2	1978
MUD FLAT	ID 16607S MDFI1	5730	4236	11633	17050104	2	1980
SAVAGE PASS	ID 14C04S SVPI1	6170	4628	11438	17060303	2	1983
SHANGHI SUMMIT	ID 15C04S SHAII	4570	4634	11545	17060306	2	1983
SHEEP MTN.	ID 11F11S SPMI1	6570	4313	11141	17040205	2	1977
SOLDIER R.S.	ID 14F11S SHEFNAME	5740	4328	11449	17040220	2	1985
SOUTH MTN.	ID 16601S SMTI1	6500	4246	11654	17050108	2	1977
WILDHORSE DIVIDE	ID 12617S WHDI1	6490	4245	11229	17040288	2	1980

Valid queries are...

FIND	AND	OR	PRINT BUF	CLEAR	UNDO
LIST	HELP	SORT	QUIT		

Commands may be abbreviated to first letter only.

The purpose of each command is as follows:

CODE:111

Keyname: SNOTEL Daily Update Report.

Source:CFS

CFS menu path:CFS, PRODUCTS, UPDATE

Menu options:by state or major hydrologic basin

DESCRIPTION:

Daily SNOTEL report by state or major hydrologic basin. Report includes only the current day (available after 9:30 am PST). All data is unedited.

EXAMPLE:

United States Department of Agriculture	Soil Conservation Service	West National Technical Center Water Supply Forecasting Staff Portland, Oregon		
SNOW - PRECIPITATION UPDATE				
Based on Mountain Data from SCS SNOTEL Sites				
As of THURSDAY: FEBRUARY 5, 1987				
BASIN Data Site Name	ELEV. (Ft)	SNOW WATER EQUIVALENT Current Average average	PRECIPITATION % of Year to date	% of average
WYOMING				
SNAKE RIVER				
TOBONTEE PASS	9580	15.5 17.6 88	14.4	77
TWO OCEAN PLATEAU	9360	15.0 20.6 73	12.8	60
SPRING CREEK DIVIDE	9000	13.0 16.6 78	12.4	74
GROS VENTRE SUMMIT	8775	5.9 10.6 56	6.8	0
WILLOW CREEK	8450	10.0 19.6 51	14.9	72
PHILLIPS BEACH	8200	13.7 20.1 68	16.0	78
LEWIS LAKE DIVIDE	7860	14.5 24.2 60	14.5	51
COTTONWOOD CREEK	7600	11.2 0 0	11.2	0
SALT RIVER SUMMIT	7600	5.2 11.4 46	7.3	57
GRASSY LAKE	7265	15.0 25.1 60	14.6	52
BASE CAMP	7030	10.2 13.5 75	10.9	70
COULTER CREEK	7020	8.3 16.6 50	10.5	58
Basin wide percent of average			64	64
UPPER YELLOWSTONE-MADISON				
PARKER PEAK	9400	12.1 13.7 88	8.0	69
BEARTOOTH LAKE	9275	10.0 15.5 64	8.2	63
TWO OCEAN PLATEAU	9360	15.0 20.6 73	12.8	60
FISHER CREEK	9100	18.0 25.0 70	14.1	52
WHITE HILL	8700	11.7 17.7 66	11.0	56
SYLVAN LAKE	8420	13.0 15.0 82	9.3	64
BLACK BEAR	7950	16.5 25.5 63	13.7	49
CANYON	7940	7.1 10.3 69	7.7	76
WOLVERINE	7650	5.0 8.5 68	7.4	76
NORTHEAST ENTRANCE	7350	4.1 6.6 62	5.4	61
WHISKEY CREEK	6800	7.7 11.6 66	7.5	49
Basin wide percent of average			71	59

Provisional data, subject to revision.

* = 25 average not available. ^ = Percent not computed #=Missing reading

Water Content and Precipitation is Recorded in Inches.

CODE:112

Keyname: SNOTEL site data -end of month.
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, (SNOW)
Menu options:DATA, ANAL.

DESCRIPTION:

End of month (one day only) SNOTEL pillow (snow water equivalent) value, included with snow course data under the WYFOR (current water year forecast) program.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 11:36:50

S N O W C O U R S E D A T A

MARCH 1987

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
ALEXANDER LAKE	10000	3/02	70	19.7	22.6	18.5
ANTERO	9200	2/26	39	6.1	1.8	2.3
ANTERO RESERVOIR	9000	2/26	26	3.6	.0	-
APISHAPA SNOTEL	10000	3/01	-	9.3E	-	6.0
APISHAPA	10000	3/02	45	11.6	3.4	6.5
ARROW SNOTEL	9900	3/01	-	8.1E	-	10.1
ARROW	9900	2/25	35	7.8	12.6	11.1
BALTIMORE	8800	2/26	30	5.8	4.9	5.6
BEAR LAKE SNOTEL	9500	3/01	-	9.4E	23.3	13.5
BEARTOWN SNOTEL	11600	3/01	-	24.8E	-	15.8
BENNETT CREEK	9300	2/28	27	6.4	8.4	6.2
BERTHOUD FALLS	10500	2/26	42	8.0	12.4	11.3
BERTHOUD PASS	9700	2/26	43	11.2	15.0	13.3

CODE:113

Keyname: SNOTEL Graphics -current and last water year.

Source:CFS

CFS menu path:CFS, DATABASE, WYSNO, GROSS

Menu options:

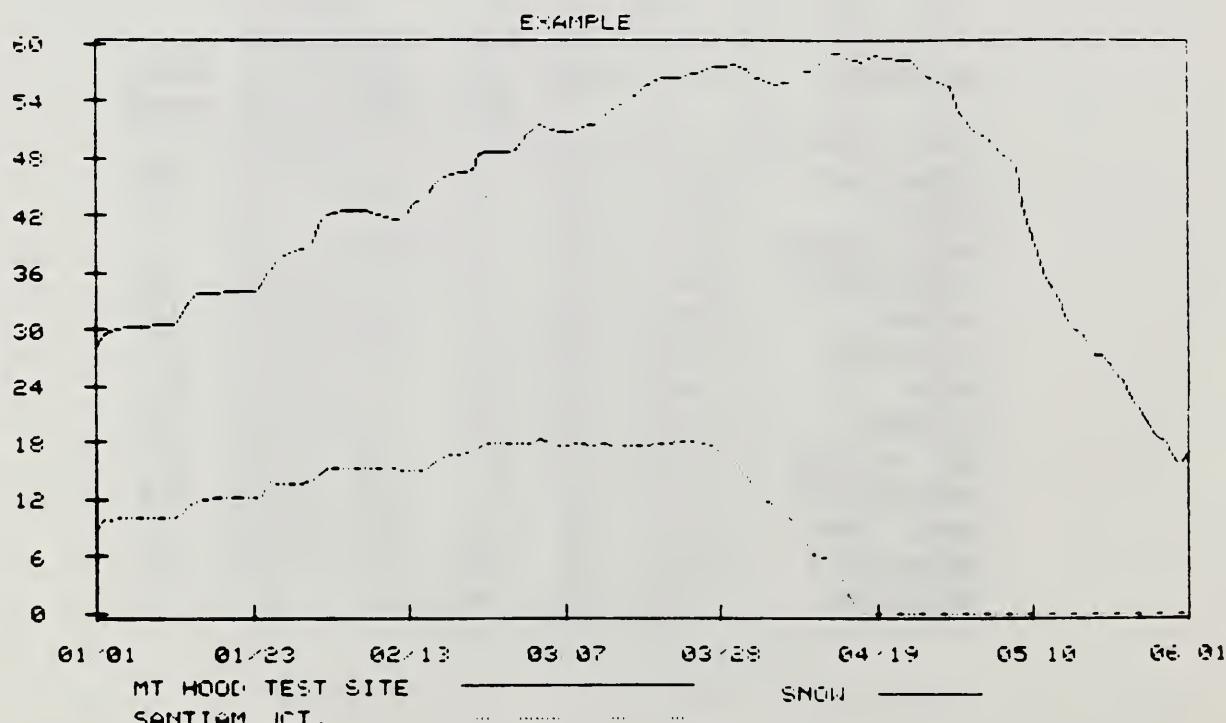
DESCRIPTION:

Graphic portrayal of current water year SNOTEL site sensor data for TEKTRONIX 4050, 4100, and 4200 series graphics terminals. User may enter up to 4 SNOTEL sites for some options.

DATA:

8 types of graphs, including: snow pillow; precipitation; temperature; pillow and precipitation; pillow and temperature; tmax., tmin., and tavg.; pillow, precip, and temperature; and pillow, precipitation, and tavg.

EXAMPLE:



CODE:114

Keyname:SNOW COURSE data -current water year-, monthly, by state.
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, DATA, (SNOW)
Menu options:LI

DESCRIPTION:

Current water year, monthly snow course data by state or major hydrologic basin. Sites are listed alphabetically. Users should select COMB option -for major basin- when entering WYFOR.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 12:48:13

S N O W C O U R S E D A T A

FEBRUARY 1987

SNOW COURSE	ELEV.	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
ABOVE BURKE	4100	1/30	36	9.0	10.4	14.2
ABOVE GILMORE	8200				-	-
ABOVE ROLAND	4350	2/01	-	14.1E	13.8	20.8
ALLEN RANCH	6470	1/27	18	4.0	9.0	7.9
ANTELOPE RIDGE	6180	2/01	-	3.5E	7.5	-
ASPEN GROVE	6500	2/01	-	5.7E	8.3	8.9
ASPEN-HALL PASS AM	8200				-	-
ATLANTA SUMMIT	7600	1/29	46	10.7	21.3	24.2
ATLANTA SUM PILLOW	7580	2/01	-	11.3	18.8	21.6
ATLANTA TOWNSITE	5370	1/29	21	4.7	7.4	-
AUSTIN BROTHERS RMCH	6400	1/27	16	3.5	8.1	6.6
BAD BEAR	4940	1/29	24	5.7	8.1	10.5
BADGER GULCH	6660	2/01	-	5.1E	9.2	8.1

Keyname:SNOW COURSE, current water year, monthly data by basin.

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, (SNOW).

Menu options:LO

DESCRIPTION:

Current water year, monthly snow course data by state or major hydrologic basin. LO option compares current water year snow depth and water content with the previous water year and the Snow Survey Program moving average period.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 12:50:29

BASIN SUMMARY OF
SNOW COURSE DATA

FEBRUARY 1987

SNOW COURSE	ELEVATION	DATE	SNOW	WATER	LAST	AVERAGE
			DEPTH	CONTENT	YEAR	1961-85
DARBY CANYON	8250	1/29/87	45	12.3	--	15.3
DEADLINE	7400	1/26/87	33	8.3	14.3	15.5
DEADLINE SOUTH	7450	1/26/87	39	11.2	19.3	16.9
DEADMAN GULCH	5600	1/30/87	24	5.8	8.9	12.5
DEADWOOD AIRSTRIP	5360	2/01/87	---	5.9E	--	11.2
DEADWOOD SUMMIT	6860	1/29/87	56	14.6	25.7	32.2
DOLLARMIDE SUMMIT	8420	1/29/87	32	6.1	16.9	17.2
EAST RAGGED SADDLE	3740	2/02/87	43	11.8	12.9	13.9
EAST RIM DIVIDE	7930	1/27/87	32	6.3	8.3	8.9
ELBO RANCH	7100	2/02/87	33	7.2	8.2	8.2
ELK BUTTE	5550	1/27/87	51	13.0	19.0	25.5
EMIGRANT SUMMIT	7390	2/02/87	33	8.0	17.7	16.9
EMIGRATION CANYON	6500	2/02/87	19	4.5	8.4	7.6

CODE:116

Keyname:SNOW COURSE -current water year data by basin
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, COMB, SNOW,
Menu options:LOST

DESCRIPTION:

Current water year snow course, monthly data (January through June) by major hydrologic basin.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 12:54:19

B A S I N S U M M A R Y O F
S N O W C O U R S E D A T A

FEBRUARY 1987

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-85
GRAHAM RANCH	6270	1/30/87	23	3.6	8.6	10.0
GRASSY LAKE	7270	1/29/87	56	14.3	21.8	24.0
GREYS BOUNDARY	5720	1/28/87	26	5.2	8.6	8.1
GROS VENTRE SUMMIT	8750	1/30/87	32	7.0	10.9	8.3
GROVER PARK DIVIDE	7000	1/28/87	25	4.0	7.2	8.3
HEART LAKE TRAIL	4800	1/31/87	46	11.8	11.2	15.2
HEMLOCK BUTTE	5810	1/27/87	65	19.2	21.7	34.0
HILTS CREEK	8000	1/27/87	12	2.5	7.3	7.7
HOODOO BASIN	6050	1/31/87	84	26.6	26.2	34.6
HOODOO CREEK	5900	1/31/87	75	23.0	20.6	31.7
HOWELL CANYON	7980	2/01/87	---	9.8E	21.2	18.2
HUCKLEBERRY DIVIDE	7300	1/29/87	43	9.0	13.7	14.7
HUMBOLDT GULCH	4250	2/26/87	33	8.5	7.0	10.7

CODE:117

Keyname:SNOW COURSE data by basin

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, COMB, ANAL

Menu options:BASS

DESCRIPTION:

Current water year snow course data by state basin or major hydrologic basin (COMB option), monthly, January through June.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 13:12:12

SNOW COURSE DATA
AND BASIN SNOWPACK SUMMARY

FEBRUARY 1987

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE

NORTHERN GREAT BASIN						
BALD MOUNTAIN AM	6720	1/29/87	3	.6	.0	2.1
BARBER CREEK (CA)	6500	1/29/87	19	4.5	8.4	8.0
CEDAR PASS (CA)	7100	1/28/87	28	7.6	10.6	10.3
DISASTER PEAK	6500	2/01/87	---	3.55	6.4	10.4
DISMAL SWAMP (DISC)			NO REPORT			
EAGLE PEAK (CA)			NO REPORT			
FORTY-NINE MOUNTAIN	6000	1/30/87	12	2.5	3.1	3.1

... PAUSE ...

CODE:118

Keyname:SNOW COURSE -current water year, by basin
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, COMB, ANAL.
Menu options:BASN

DESCRIPTION:

Current water year snow course measurement by state basin or
major basin, monthly, January through June.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 13:14:15

BASIN-WIDE SNOWPACK SUMMARY

MARCH

BASIN SNOW COURSE	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
LAMOILLE CREEK		
LAMOILLE #1	65	70
LAMOILLE #3	57	74
LAMOILLE #5	38	64
TOTAL -- 3 COURSES (SWE,IN= 28.3)	47%	68%
	(60.8)	(41.8)

S. FORK HUMBOLDT CORRAL CANYON	48	57
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Keyname:SNOW COURSE -historical database

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (SNOW)

Menu options:

DESCRIPTION:

Period of record, historical (previous water year) snow course data as queried by user. Numerous database processing routines such as INDEX, TABLE, etc. At the end of each water year, snow course data is transferred over from WYFOR to DATABASE. Standard data includes date of measurement, snow depth, and snow water equivalent.

EXAMPLE:

/cfs/cfs/data/snow53

Station : 18A03, BUTTE CREEK

Unit = inches

year/	January	February	March	April	May	June						
card	date	dep	sue	date	dep	sue	date	dep	sue	date	dep	sue
61-1	K/29	21	5.3	1/31	27	6.0	3/01	40	11.4	3/29	37	12.3
62-1	K/28	25	5.4	1/29	33	8.0	2/26	39	10.9	3/29	45	14.0
63-1	K/28	6	1.9	1/28	10	1.6	2/25	13	3.3	3/28	12	2.4
64-1	K/27	18	3.4	1/27	30	6.9	2/26	27	7.6	3/27	33	9.6
65-1	K/28	20	5.5	1/26	37	9.7	2/26	38	11.9	3/29	36	12.1
66-1	1/03	27	4.0	1/27	25	7.4	2/25	27	8.0	3/29	26	8.4
67-1	K/28	17	4.4	1/27	26	6.5	2/24	28	7.6	3/30	34	10.6
68-1	K/27	24	4.5	1/29	33	7.5	2/26	28	7.8	3/27	26	8.1
69-1	1/02	31	7.6	1/27	44	9.9	2/24	53	14.6	3/24	43	14.4
70-1	K/23	17	3.0	1/26	27	6.0	2/24	28	8.3	3/26	31	9.4
71-1	K/28	28	6.3	1/25	32	9.1	2/23	31	9.3	3/25	39	11.7
72-1	K/23	29	3.9	1/25	32	8.4	2/24	34	9.7	3/29	23	6.9
73-1	K/27	17	3.0	1/29	26	5.4	2/26	29	7.1	3/27	26	7.0
74-1	E/ST	5.3	1/30	32	8.7	2/27	39	10.2	3/29	42	14.3	4/29
75-1	K/31	22	4.8	1/30	31	7.8	2/27	39	10.9	3/27	45	12.3
76-1	K/29	18	2.6	1/29	23	6.2	2/26	30	7.2	3/29	35	8.9
77-1	K/30	9	1.5	1/31	14	2.4	2/28	17	3.4	3/31	20	5.8
78-1	K/27	22	5.4	1/25	33	8.6	2/24	33	10.0	3/28	26	9.5
79-1	K/28	12	2.0	1/29	16	2.7	2/26	28	5.8	3/28	23	5.7
80-1	1/02	13	2.0	1/28	24	4.2	2/26	30	7.0	3/24	32	9.4
81-1	K/22	20	3.3	1/29	17	3.8	2/26	23	5.3	3/26	20	5.0
82-1	1/04	24	3.4	1/27	31	7.0	2/26	28	7.5	3/30	33	8.6
83-1	E/ST	5.3	E/ST	8.7	2/26	38	11.3	4/01	33	10.7	E/ST	6.5
84-1	E/ST	4.9	1/28	32	8.0	2/26	38	10.6	3/31	33	11.6	E/ST
85-1	E/ST	4.9	1/27	28	8.0	2/27	29	7.1	3/31	38	9.6	E/ST
86-1			1/30	28	6.4	2/26	28	7.3	3/27	18	5.8	

FIRST OF MONTH MEASUREMENTS

average depth and sue :

years	20	4.2	28	6.7	31	8.5	31	9.4	16	5.7
years	21	25	25	26	26	26	26	26	21	25

1961-1985 average :

years	20	4.2	28	6.7	31	8.6	32	9.6	16	5.7
years	21	25	24	25	25	25	25	25	21	25

Keyname:SNOW COURSE -historic database -probability analasys

Source:CFS

CFS menu path:CFS, DATABASE, DBQ,

Menu options:COLSUM

DESCRIPTION:

Frequency and probability analyses of period of record snow course data in operational database for user specified months.

EXAMPLE:

Gage No. Station : 05K14,BERTHOUD SUMMIT

Ranks	WY	Apr #	Total inches	Weibull plotpos	Value log10
1	51	17.30	17.30	0.027	1.238
2	52	24.00	24.00	0.054	1.380
3	53	17.30	17.30	0.081	1.238
4	54	15.10	15.10	0.108	1.179
5	55	15.50	15.50	0.135	1.190
6	56	23.00	23.00	0.162	1.362
7	57	20.60	20.60	0.189	1.314
8	58	23.30	23.30	0.216	1.367
9	59	25.70	25.70	0.243	1.410
10	60	21.60	21.60	0.270	1.334
11	61	18.20	18.20	0.297	1.260
12	62	22.10	22.10	0.324	1.344
13	63	14.70	14.70	0.351	1.167
14	64	17.40	17.40	0.378	1.241
15	65	23.80	23.80	0.405	1.377
16	66	13.70	13.70	0.432	1.137
17	67	17.70	17.70	0.459	1.248
18	68	18.20	18.20	0.486	1.260
19	69	14.50	14.50	0.514	1.161

number of values = 19 (EXAMPLE ONLY!)

arithmetic average = 19.57 log average = 1.282

std. deviation = 3.96 log std. dev. = 0.093

coeff of variation = 0.20 log cof. var. = 0.073

arithmetic skew = -0.070 log skew = -0.670

Exceed Z Prob	Return Period	Normal Probability	Log Normal Probability	LP3 Probability
99.00	1.010	10.35	11.63	10.50
95.00	1.053	13.05	13.46	12.99
90.00	1.111	14.49	14.55	14.40
80.00	1.250	16.23	15.99	16.16
50.00	2.000	19.57	19.16	19.62
20.00	5.000	22.91	22.95	23.02
10.00	10.000	24.65	25.22	24.72
5.00	20.000	26.09	27.26	26.05
1.00	100.000	28.79	31.55	28.35

CODE: 121

Keyname:SNOW COURSE -historical database, probability analyses.
Source:CFS
CFS menu path:CFS, DATABASE, DBQ
Menu options:INDEX (similar to COLSUM)

DESCRIPTION:

Probability analysis of historical snow course data - similar to COLSUM (120) except that user specifies datatype, weight for station, earliest and latest water year to consider, month span to be considered within each water year, and weight for each month.

EXAMPLE:

Weight: 1.00 Station: 09J11, ASHLEY TWIN LAKES

Start Yr. 62 End Yr. 86
Year April May INDEX
(Wt.) (1.00) (1.00) TOTAL

62	28.50	21.00	49.50
63	5.20	11.60	16.00
64	12.00	12.50	24.50
65	*****	*****	*****
66	15.40	*****	*****
67	*****	*****	*****
70	16.10	20.90	37.00
71	16.50	19.20	35.70
72	17.50	21.40	38.90
73	25.00	20.80	45.80
74	*****	14.40	*****
75	*****	22.10	*****
76	*****	19.50	*****
77	3.00	1.20	5.00
78	15.00	20.20	36.00
79	*****	15.30	*****
80	25.20	26.10	51.30
81	*****	11.60	*****
82	21.60	21.00	42.60
83	22.10	*****	*****
84	16.20	20.10	36.30
85	16.70	*****	*****
86	27.00	22.30	48.30

AVERAGE	36.05
MAXIMUM	51.30
MINIMUM	5.00

number of values = 13
 arithmetic average = 36.03 log average = 1.502
 std. deviation = 13.53 log std. dev. = 0.276
 coeff of variation = 0.38 log coeff. var. = 0.184
 arithmetic stdev = -1.151 log stdev = -2.383

Exceed Prob	Return Period	Mortal Probability	Log Mortal Probability	LPJ Probability
99.00	1.010	4.53	7.25	2.85
95.00	1.053	13.76	11.18	8.86
90.00	1.111	18.68	14.08	14.25
80.00	1.250	24.64	18.62	22.98
50.00	2.000	36.05	31.78	39.69
20.00	5.000	47.47	54.26	50.40
10.00	10.000	53.43	71.76	52.71
5.00	20.000	58.33	90.37	53.55
1.00	100.000	67.29	137.29	54.00

Keyname:SNOW COURSE field location information by SCS Field office, county, etc.

Source:CFS

CFS menu path:CFS, DATABASE, FLIP

Menu options:

DESCRIPTION:

FLIP program locates all stations and sites which are supported by the operational database, according to state, county, and SCS Field Office. The program is designed to simplify access of database information by providing links to sites by political boundary.

EXAMPLE:

- 1. CFS DATABASE Sitename = PROSPECT AIRSTRIP

2. Local SCS Field Office location(s).....
.....Fairbanks

3. County name (or other desig.).....Koyukuk
4. State FIPS code.....02
5. County FIPS code number351
6. CFS Data Type.....SNOW COURSE
7. USGS - Hydrologic Unit Code number (HUC).....19040602
8. CFS Site Identification Number (I.D).....50R01
9. Latitude (degrees and minutes).....66,49
10. Longitude (degrees and minutes).....150,39
11. Elevation (feet).....980
12. SHEF CODE (Standard Hydrologic Exchange Format)....SHEFNAME

13. Section,
14. Township,
15. Range

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

CODE:123

Keyname:SNOW COURSE -CFS based Annual Data Summary
Source:CFS (also available as publication).
CFS menu path:CFS, PRODUCTS, ADS
Menu options:SWE, SWE_AVG

DESCRIPTION:

Previous water year, monthly snow course data (January through June) by state, - available once each year, on or about January 1. This is the same data which is published in the state Annual Data Summary. SWE_AVG displays 1st and 15th of month snow course averages for 25 year period.

EXAMPLE:

SNOW COURSE NAME	ELEV		January		February		March			
	April		May		June					
	(ft)	Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE
Date	Depth	SWE	Date	Depth	SWE	Date	Depth	SWE		
TRICKLE DIVIDE	10000	Est	62	20.0	Est	67	24.1	Est	83	28.8
TRINCHERA	11000				1/27	15	3.3	2/25	21	4.8
	3/24	25	6.5	4/25	26	7.6				
TROUT CREEK PASS	10050				1/30	13	2.6	2/24	18	3.7
	3/24	16	3.6	4/24	0	.0				
TROUT LAKE	9700				1/30	27	6.9	2/26	46	11.8
	3/27	48	14.2	4/30	34	12.7				
TROUT LAKE #2	9700				1/30	27	6.9	2/26	46	11.8
	3/27	48	14.2	4/30	34	12.7				
TWIN LAKES TUNNEL	10100	12/27	21	6.3	1/24	29	7.2	Est	46	10.2
	3/28	41	12.0	4/25	34	11.8				

Keyname:SNOW COURSE -Annual Data Summary
 Source:Snow Survey Publication by state
 CFS menu path:(also available in CFS)
 Menu options:

DESCRIPTION:

 Yearly publication by state, includes first of the month snow depth and swe (January through June) and 25 year snow water equivalent averages (January through June) for all snow courses. Publication also includes SNOTEL and monthly precipitation data. Snow data site map enclosed with publication. Published about January 1.

EXAMPLE:

 Snow Course SWE Averages: 1961-1985 (Inches)

SNOW COURSE NAME	ELEV. ft.	JANUARY		FEBRUARY		MARCH		APRIL		MAY		JUNE	
		IN	MM	IN	MM	IN	MM	IN	MM	IN	MM	IN	MM
MOUNT TOM	5560	2.2		3.1		4.9		3.1		3.6			
MUDGY CREEK E.S.	7620	1.0		2.4		3.1		4.1		3.7			
NEW FOKE LAKE	8340	6.2		8.0		9.9		11.5		10.5		.0	
NORRIS BASIN	7500	5.3		6.3		10.0		11.6		8.6			
NORTH BARRETT CREEK	9400	8.9		13.9		17.4		21.7		23.7		12.0	
NORTH FRENCH C.R. SNT	10130	9.6		13.0		19.8		26.6		28.2		20.0	
NORTH TONGUE	8450	6.4		8.4		10.9		13.8		14.6			
OLD BATTLE	9800	16.6		22.5		29.3		33.0		38.1		25.6	
OLD FAITHFUL	7400	6.3		10.7		13.3		16.8		19.1			
ONION GULCH	8780	6.4		6.0		7.6		9.2		9.3			
OWL CREEK	8980	2.6		3.2		3.9		5.3		6.4			
PABAERS PEAK	8400	12.9											
PHILLIPS BEACH	8200	16.8		21.2		23.5		30.3		31.1		19.9	
POGGY CREEK	9350			8.6		10.8		13.0		13.7			
POISON MEADOWS	6380			20.3		24.9		29.6		30.8			
POLE MOUNTAIN	8700	2.8		6.7		6.1		7.7		4.2			
POUNDER RIVER PASS	9480	3.6		7.6		9.9		11.4		12.6			
PURGATORY GULCH	2970	4.4		7.0		9.0		11.5		11.3			
RANGE CREEK	8120	3.2		6.7		8.0		9.6		8.8			
REUTER CANYON	6280	4.9		6.6		8.2		9.1		9.0			
ROCK CREEK	10020	11.4		16.7		22.1		28.5		32.1			
ROBOT CREEK	8300			15.3		19.7		22.5		21.1			
RYAN PARA	8600	6.9		7.7		10.0		11.7		9.1			
SALT RIVER SUMMIT	7700	6.3		11.0		14.1		16.5		13.9			
SANDSTONE E.S.	8150	6.4		10.0		12.8		13.0		11.3		.0	
SAWMILL DIVIDE	9240	6.7		9.1		9.9		13.3		17.0			
SAWMILL GLACIE	8740	6.1		9.7		7.2		9.0		8.6			
SMELL CREEK	9380	7.7		9.8		12.2		16.2		17.1			
SHERIDON E.S.	7750	3.6		9.1		6.6		7.3		6.1			
SNAKE RIVER STATION	6920	8.6		14.6		18.5		21.5					
SWIMMER BASIN E.S.	9040	8.0		11.8		16.8		18.9		14.8		.0	
SNOW KING Mtn	7660	6.6		10.3		12.9		13.3		13.6			
SOLDIER PARK	8780	2.8		3.8		6.6		6.1		7.1			
SOUR DOUGH	8460	3.3		6.6		5.6		7.1		7.2			
SOUTH PASS	9060	8.6		11.1		13.9		16.1		16.4			
SOUTH THOMAS FORA	7840	7.3		12.1		14.9		17.3		13.6			
SPRING C.R. DIVIDE	9000	12.6		18.8		22.9		27.8		20.3		17.2	
ST.LAWRENCE E.S.	8760	3.1		6.6		3.6		7.2		7.8			
SUGAR CREEK	8820	3.5		7.7		10.6		13.0		13.2			
SWEETWATER Mtn.	5860	2.5		6.1		5.8		9.4		9.0			

CODE:125

Keyname:SNOW COURSE -Publication -Annual Data Summary Map

Source:Snow Survey Program publication by state

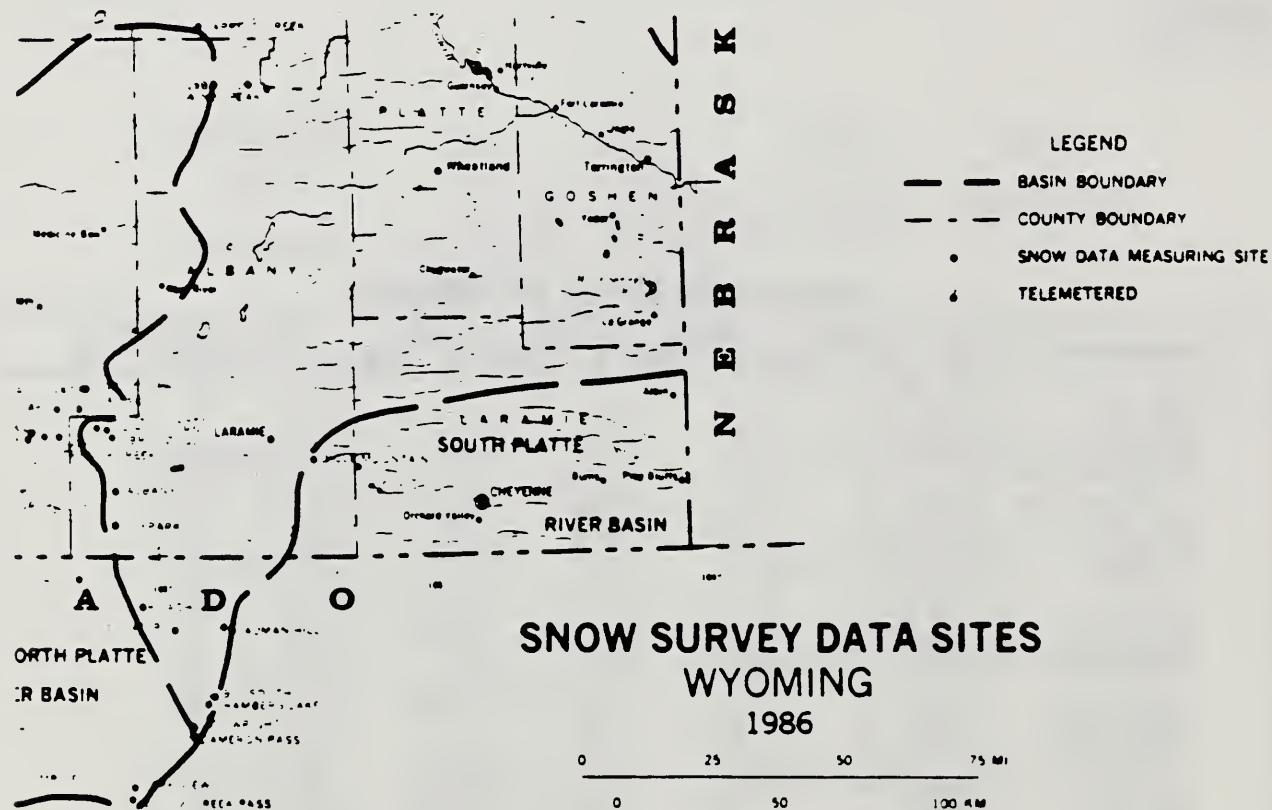
CFS menu path:

Menu options:

DESCRIPTION:

State snow data site map showing snow course and SNOTEL site locations and basins. Includes index of site location and configuration information. Published yearly about January 1.

EXAMPLE:



FORMERLY 702202910 JUNE 1986 4R 39447

Keyname: SNOW COURSE data -monthly publication.

Source: Snow Survey Program, State Water Supply Outlook Report
SES, San Jose, Calif.

CFS menu path:
Main menu

DESCRIPTION:

Snow Survey Program, snow course data published by state, monthly, January through May or June.

EXAMPLE:

SNOW DATA MEASUREMENTS (cont.)

CODE:127

Keyname:Mountain snowpack graph

Source:Snow Survey Program, State Water Supply Outlook Report

CFS menu path:(publication)

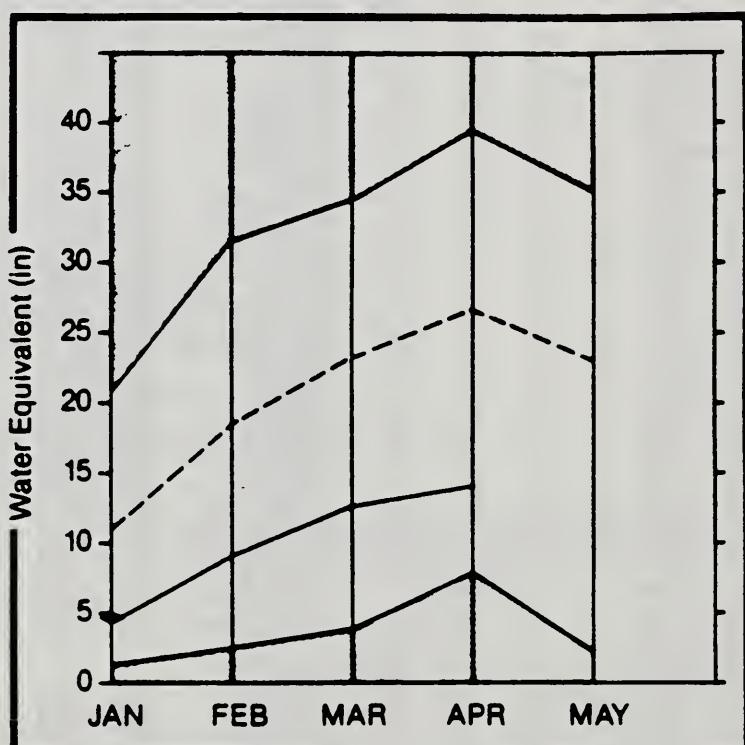
Menu options:

DESCRIPTION:

Graphic display of mountain snowpack conditions by basin, within the state (based on selected snow data sites). Published monthly, by state (January through June for most states).

EXAMPLE:

Mountain snowpack* (inches)



*Based on selected stations

Maximum

Average

Minimum

Current

CODE:128

Keyname:Snowpack Analysis by Basin -publication

Source:Snow Survey Program, State Water Supply Outlook Report

CFS menu path:(also available on CFS under ADS)

Menu options:

DESCRIPTION:

Watershed snowpack analysis based on selected snow data sites.
Table -published in State Water Supply Outlook Report, monthly,
January through June.

EXAMPLE:

WATERSHED	NO. COURSES AUG'D	THIS YEAR AS % OF	
		LAST YR.	AVERAGE
Camas-Beaver Creeks	4	73	59
Henry's Fork River	13	55	57
Teton River	6	67	65
Snake above Palisades	32	52	63
Snake above Jackson Lake	10	57	55
Gros Ventre River	3	55	63
Greys River	4	58	57
Salt River	5	52	58
Willow Creek	11	55	64
Blackfoot River	10	57	57
Portneuf River	13	51	50
Toponce Creek	3	51	43

evels and also (2) below.

CODE:129

Keyname:Snowpack General Outlook -publication
Source:Snow Survey Program, State Water Supply Outlook Report
CFS menu path:(also available on CFS under ADS)
Menu options:

DESCRIPTION:

Generalized narrative summary of state snowpack condition - published monthly, by state, January through June. A related narrative also available by basin in the same report.

EXAMPLE:

GENERAL OUTLOOK

SUMMARY:

MUCH OF IDAHO'S MOUNTAIN SNOWPACK IS THE SECOND LOWEST ON RECORD FOR APRIL 1. STREAMFLOWS IN THE SOUTHERN HALF OF THE STATE ARE EXPECTED TO BE NEAR OR JUST ABOVE THE LOWEST ON RECORD. SOME MAJOR IRRIGATION RESERVOIRS WILL NOT FILL TO CAPACITY. IRRIGATORS WITHOUT BENEFIT OF RESERVOIR STORAGE SHOULD EXPECT WATER SHORTAGES THIS SUMMER. UNLESS SOUTHERN AND CENTRAL IDAHO RECEIVE HEAVY RAINS THIS SPRING AND SUMMER, THE WATER SUPPLY OUTLOOK FOR 1987 IS VERY BLEAK. SEE THE LAST PAGES OF THIS BULLETIN FOR SUGGESTED WATER CONSERVATION MEASURES.

SNOWPACK:

April 1 snow surveys show Idaho's snowpack conditions remain below to well below normal throughout the state. The highest snowpacks are in northern Idaho where conditions range from 57% of average on the Salmon River basin to 81% of average on the Priest River drainage. The central Idaho mountains report the lowest snowpack conditions in the state with most basins ranging from 32 to 50% of normal. Snowpacks in southern and eastern Idaho and in the upper Snake River basin in Wyoming generally range from 50 to 69% of average. Mild temperatures and rainfall during early March triggered low and middle elevation snowmelt throughout the state. If mild weather conditions continue, snowpacks are expected to melt much earlier than normal.

Keyname:Snowpack condition (narrative)

Source:Snow Survey Program, State Water Supply Outlook Report

CFS menu path:CFS, PRODUCTS, WSOR (also available in State Water Supply Outlook Report publication.)

Menu options:REP80, REP, BULL80, BULL

DESCRIPTION:

General narrative summary of state snowpack conditions. A similar narrative is available for each basin within the state.

EXAMPLE:

SNOWPACK

SNOWPACK STATISTICS INCREASED SLIGHTLY IN COLORADO DURING FEBRUARY TO 93 PERCENT OF NORMAL. THIS IS ONLY 79 PERCENT OF LAST YEAR'S FIGURES ON MARCH FIRST. SNOWPACK IN NORTHERN PORTIONS OF NEW MEXICO INCREASED SIGNIFICANTLY DURING FEBRUARY TO 118 PERCENT OF AVERAGE. THE CURRENT SNOWPACK IS 81 PERCENT ABOVE LAST YEAR'S READINGS. COLORADO'S HIGHEST SNOWPACK FIGURES CONTINUED TO BE WITHIN THE ARKANSAS BASIN, WHICH WAS 131 PERCENT OF NORMAL. SNOWPACK IN NEW MEXICO'S RED RIVER BASIN IS THE HIGHEST THROUGHOUT THE NORTHERN PART OF THE STATE AT 73 PERCENT ABOVE AVERAGE. IN COLORADO, THE RIO GRANDE, SAN JUAN, AND DOLORES RIVER BASINS ALL HAVE SNOWPACKS ABOVE AVERAGE. THE LOWEST SNOWPACK IN COLORADO LIES WITHIN THE YAMPA AND NORTH PLATTE RIVER BASINS. IN NORTHERN NEW MEXICO THE RIO CHAMA BASIN HAS THE LOWEST FIGURES AT 86 PERCENT OF NORMAL.

CODE:131

Keyname:Watershed Snowpack Analysis

Source:CFS (also available in published Water Supply Outlook Reports).

CFS menu path:CFS, PRODUCTS, WSOR

Menu options:REP80, REP, BULL80, BULL

DESCRIPTION:

Tabular display of watershed snowpack analyses based on selected snow measurements within a major basin in the state. This is the same report which is published in the State Water Supply Outlook Report. Available monthly, January through June, by state.

EXAMPLE:

WATERSHED SNOWPACK ANALYSIS

WATERSHED	NO. COURSES	THIS YEAR AS % OF	AVE.D	LAST YR. AVERAGE
BLUE RIVER	6	59		79
COLORADO	16	58		71
PLATEAU	2	96		114
ROARING FORK	8	66		78
WILLIAMS FORK	4	61		70

Enter q, bye, exit, end, or quit to leave or enter topic number (type carriage return for list) :

CODE:132

Keyname: SNOTEL Historic & Current Water Year Database Graphics

Source:CFS

CFS menu path:CFS, DATABASE, GRAPHICS

Menu options:COMP, DAILY, PARTIAL

DESCRIPTION:

CFS graphics displays of historical and current water year, daily SNOTEL data (and other DATABASE daily data) Tektronix series 4050, 4100, and 4200 series graphics terminals or computers with Tektronix emulators (see also GSS option, DATABASE menu). Data for graphs is obtained from the operational database (ODB) and from the WYSNO, WYSQ program using the TABLE command.

DATA:

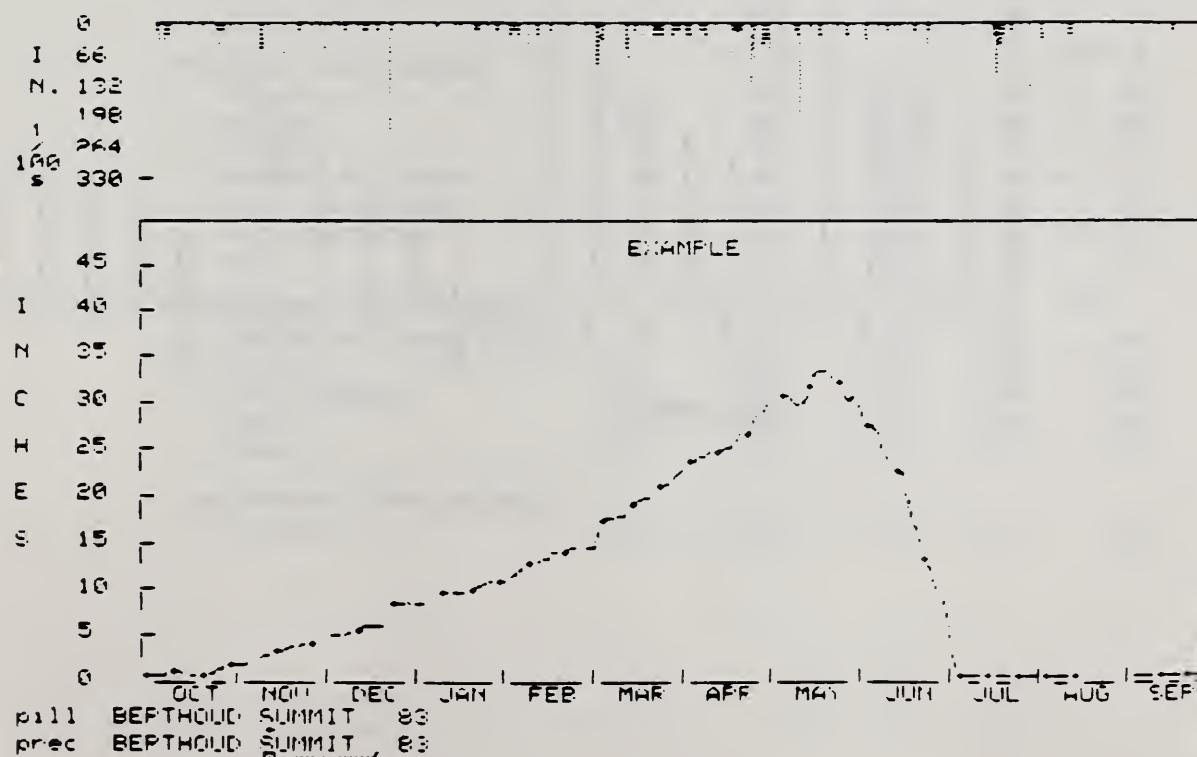
Three types of graphs:

COMP = composite graph (bar and line graphs) of daily data - requires two files (e.g. SNOTEL pillow -1983 and SNOTEL precipitation -1983)

DAILY = line graph of daily accumulated data.

PARTIAL = line graph of partial year daily data.

EXAMPLE:



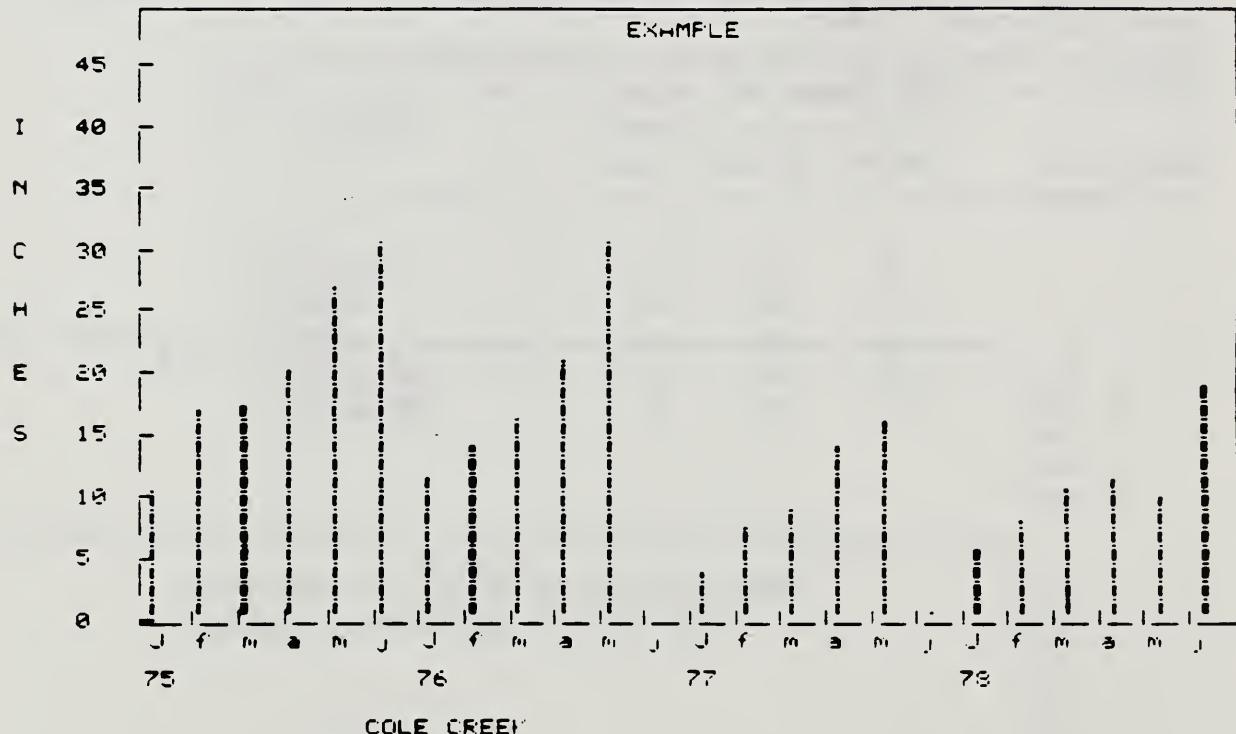
CODE:133

Keyname:Snow course -Historical database -Graphics
Source:CFS
CFS menu path:CFS, DATABASE, GRAPHICS
Menu options:SNOBAR

DESCRIPTION:

CFS graphics display -bar plot- of monthly snow course data for Tektronix 4050, 4100, and 4200 series graphics terminals and computers with emulators for these terminals. User develops a snow course file using the operational database (ODB) and the TABLE command. Graph allows user to plot up to 6 years of data.

EXAMPLE:



Keyname:Snowpack -Fall report, by state
 Source:SCS, state publication (options)
 CFS menu path:
 Menu options:

DESCRIPTION:

Optional fall publication, by SCS, state Snow Survey Program often in cooperation with other agencies. Report summarizes, among other things, end of season (current water year) snow coverage.

EXAMPLE:

1986 SNOW COVER COMPARISONS

(as a percent of average)

	<u>JAN.1</u>	<u>FEB.1</u>	<u>MAR.1</u>	<u>APR.1</u>	<u>MAY.1</u>
COLUMBIA RIVER DRAINAGE					
Kootenai	70	70	72	65	56
Flathead	84	74	79	70	67
Upper Clark Fork	70	69	88	79	74
Lower Clark Fork	74	68	80	85	65
Bitterroot	62	65	91	80	72
MISSOURI RIVER DRAINAGE					
Jefferson	87	80	102	92	88
Madison	101	90	105	95	89
Gallatin	70	65	80	74	67
Missouri Main Stem	98	84	96	84	69
Judith-Musselshell	98	83	92	80	65
Sun-Teton-Marias	91	73	82	72	61
Milk	70	59	58	48	31
YELLOWSTONE RIVER DRAINAGE					
Yellowstone (above Bighorn)	86	81	100	91	82
Bighorn	115	103	140	116	112
Little Bighorn	130	106	109	103	102
Tongue	138	100	117	108	106
Powder	118	101	117	110	105
SASKATCHEWAN RIVER DRAINAGE					
St. Mary's	67	69	71	52	48

Keyname:SNOW COURSE location information
 Source:CFS
 CFS menu path:CFS, DATABASE, DBQ
 Menu options:FLIST, FLISTBYNAME, FLISTBYID

DESCRIPTION:

 CFS DATABASE commands which provide the user with a downloadable file which contains snow course site location information. FLISTBYNAME sorts the file by sitename. FLISTBYID sorts the file by CFS identification. FLIST provides an unsorted list of site location information. In each case the user will be asked to name the file. The files may then be downloaded by using the PRT option under the CFS, UTIL menu. DATABASE also provides the command options LIST, LISTBYNAME and LISTBYID which give the same outputs but output is directed to the screen rather than to a file.

EXAMPLE:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	32	007	SNOW	16040103	15J17	4031	11526	7800	AMERICAN BEAUTY - AERIAL MARKER
2	32	033	SNOW	16020301	14L01	3858	11415	7950	BAKER CREEK #1
3	32	033	SNOW	16020301	14L02	3858	11416	8950	BAKER CREEK #2
4	32	033	SNOW	16020301	14L03	3858	11416	9250	BAKER CREEK #3
5	32	013	SNOW	17120008	19H01	4147	11937	6720	BALD MT.
6	32	007	SNOW	17050102	15H01	4150	11527	7800	BEAR CREEK
7	32	033	SNOW	16060008	14K02	3921	11439	9100	BERRY CREEK
8	32	007	SNOW	17050104	15H04	4146	11543	6700	BIG BEND
9	32	015	SNOW	16040107	17K01	3921	11708	66000	BIG CREEK CAMPGROUND
10	32	015	SNOW	16040107	17K02	3918	11707	7600	BIG CREEK MINE
11	32	015	SNOW	16040107	17K04	3918	11707	8700	BIG CREEK, SUMMIT
12	32	015	SNOW	16040107	17K03	3918	11707	7800	BIG CREEK, UPPER
13	32	015	SNOW	16050102	19K01	3927	11957	8300	BIG MEADOWS
14	32	033	SNOW	16060008	14K01	3928	11439	7500	BIRD CREEK
15	32	007	SNOW	17040213	14H02	4133	11457	5800	BOIES RESERVOIR
16	32	013	SNOW	16040109	17H02	4145	11732	6700	BUCKSKIN, LOWER
17	32	013	SNOW	16040109	17H01	4147	11732	7200	BUCKSKIN, UPPER
18	32	003	SNOW	16060014	15M02	3616	11545	9000	CLARK CANYON
19	32	005	SNOW	16050201	19K05	3907	11954	7300	CLEAR CREEK
20	32	007	SNOW	17050105	16H06	4140	11603	6650	COLUMBIA BASIN - AERIAL MARK

Keyname: SNOTEL data -historic database -format conversion

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (datatype snot)

Menu options:SNOSUM

DESCRIPTION:

SNOSUM is a DATABASE routine which converts SNOTEL daily data into other formats so that it can be compared with snow course, NWS, and SCS monthly precipitation, and NOAA climate data in the format in which they are presented in the database. A "Snow Table Format" converts SNOTEL daily pillow data into snow course, first of the month snow water equivalent. A "Clim Table Format" converts cumulative, daily SNOTEL precipitation data into daily precipitation. Another option under this format converts daily, cumulative snow-water-equivalent into daily snow-water-equivalent.

EXAMPLE:

Station : 15H01S, BEAR CREEK

Unit = inches

year/	January	February	March	April	May
-------	---------	----------	-------	-------	-----

June

card date dep	swe	date dep	swe	date dep	swe	date dep	swe
---------------	-----	----------	-----	----------	-----	----------	-----

date dep swe

83-1 1/01	10.9	2/01	15.3	3/01	21.1	4/01	28.3	5/01	29.8
-----------	------	------	------	------	------	------	------	------	------

6/01 18.8

84-1 1/01		2/01	22.6	3/01	30.4	4/01	36.8	5/01	42.5
-----------	--	------	------	------	------	------	------	------	------

6/01 22.5

85-1 1/01	11.9	2/01	11.4	3/01	16.3	4/01	24.3	5/01	15.2
-----------	------	------	------	------	------	------	------	------	------

6/01 0.0

86-1 1/01	7.7	2/01	10.9	3/01	20.3	4/01	22.3	5/01	18.0
-----------	-----	------	------	------	------	------	------	------	------

6/01 0.1

83-2 1/15	12.4	2/15	18.3	3/15	23.5	4/15	30.6	5/15	30.7
-----------	------	------	------	------	------	------	------	------	------

6/15 6.0

84-2 1/15	20.6	2/15	25.3	3/15	31.5	4/15	40.5	5/15	41.7
-----------	------	------	------	------	------	------	------	------	------

6/15 19.3

85-2 1/15	11.6	2/15	13.8	3/15	19.8	4/15	19.5	5/15	7.5
-----------	------	------	------	------	------	------	------	------	-----

6/15 0.0

86-2 1/15	8.9	2/15	14.4	3/15	22.6	4/15	21.8	5/15	17.5
-----------	-----	------	------	------	------	------	------	------	------

6/15 0.0

NOTES: O/dd - October, J/dd - November, K/dd - December, E/ST - estimate

CODE:200

Keyname: Precipitation, daily, cumulative, SNOTEL, current water year.

Source: SNOTEL minicomputer - SCS West National Technical Center (WNTC).

CFS menu path:

Menu options: RE, NA

DESCRIPTION:

Current water year SNOTEL daily precipitation report for sites requested by user. User may "store" site list with the "NA" command. User access to the SNOTEL minicomputer is somewhat limited and is obtained by request to the SCS state Snow Survey Program staff. The precipitation sensor is one of several standard SNOTEL site sensors (see CODE 202 & 203).

NOTE:

Note that all data is displayed in tenths except battery voltage. All data is considered provisional and is usually edited within 30 days.

EXAMPLE:

7/14/78 8:05

DATA REPORT FOR COOP

NAME : LAST 10
TIME : LAST 10 DAYS

NOTE: ALL DATA IN ENGINEERING UNITS (IN TENTHS XXX.X)
EXCEPT DATA MARKED 'N' WHICH IS A STRAIGHT VOLTAGE READING

REMOTE SITE NAME ELEVATION
***** *****
MM/DD/YY HH:MM BATT SNOW RAIN AIR

MOSQUITO RIDGE EL: 10100
***** *****
7/ 6/78 14:16 127V 12V 123V 159V
7/ 6/78 18: 3 127V 12V 123V 199V
7/ 7/78 5:43 124V 14V 125V 104V
7/13/78 10:23 129V 10V 125V 114V
:24 132V 12V 125E 118V
% OF AVERAGE 85.2% 103.0%

ABOVE BURKE

7/ 5/78 4:55 119V 56V 101V 120V
7/ 5/78 12:58 120V 55V 101V 120V
% OF AVERAGE 102.5% 88.0%

LONE PINE EL: 9500

NO ON-LINE DATA

BIG BOULDER CREEK EL: 10500

7/ 5/78 4:55 123V 172V 100V 118V
7/12/78 12:39 124V 175V 104V 115V
7/13/78 10:30 126V 172V 106V 114V
7/14/78 5:30 129V 172V 106E 100V
% OF AVERAGE ??.% ??.%

CODE: 201

Keyname: Precipitation, daily, cummulative, SNOTEL

Source: GFS

CES menu path:CES DATABASE, WYSNO.

CF5 menu path:CF5, DATA5
Menu options:DGNA, DGBE,

DESCRIPTION:

Current water year, SNOTEL (remote telemetry) report which includes cumulative daily precipitation sensor values for SNOTEL sites on dates specified by the user. SNOTEL data is transferred from the SNOTEL computer to the CFS computer after 9:30 am PST and is provisional (unedited). Editing of the data is usually accomplished within 30 days. The user may use the DGRE option to assemble a report for selected sites to be viewed one time only, or may use the DGNA option to "save" the report format (site names and reporting interval) for subsequent updates.

See CODE 201.

EXAMPLE:

**United States Soil West National Technical Center
Department of Conservation Water Supply Forecasting Staff
Agriculture Service Portland, OR**

SMOTEI DATA REPORT

**** Provisional data, subject to revision. ****

08/17/87 15:33 PST

Site Name	MM/DD (PST)	Water Content	Precip (YTD)	AM Temp	Previous Days Max	Min	Avg
-----------	-------------	---------------	--------------	---------	-------------------	-----	-----

BEAR BASIN	08/16 0520	-	0.1	21.8	29
	08/17	++ no report ++			
DRY BREAD POND	08/16 0448	0.0	20.6	42	
	08/17 0536	-	0.2	20.6	39

** Provisional data, subject to revision. **

-> Precios(YTD) - 10/1/84 to date.

-> Water Content and Precipitation is recorded in Inches.

-> Temperature data recorded in degrees Fahrenheit.

-> Current days SNOTEL data posted after 8:30 PST daily.

Y

PRESS RETURN to continue

CODE:202

Keyname: Precipitation, current water year, SNOTEL,
cummulative, daily, by state or major basin.

Source:CFS,

CFS menu path:CFS, DATABASE, PRODUCTS, UPDATE

Menu options:State or major basin.

DESCRIPTION:

Pre-formatted, daily SNOTEL report which includes
cummulative, current water year precipitation (inches).

NOTE:

All data is unedited. Users should contact the SCS state
Snow Survey Program office if data appears to be suspect.

EXAMPLE:

United States Soil West National Technical Center
Department of Conservation Water Supply Forecasting Staff
Agriculture Service Portland, Oregon

S N O W - P R E C I P I T A T I O N U P D A T E

Based on Mountain Data from SCS SNOTEL Sites
As of MONDAY: AUGUST 17 , 1987

BASIN Data Site Name	ELEV. (Ft)	SNOW WATER EQUIVALENT Current Average	PRECIPITATION % of Year to % of Year to date average
-------------------------	---------------	-----------------------------------------------	---------------------------------------------------------------------------

ARIZONA

SALT RIVER BASIN

BALDY	9125	.0	+	+	33.1	130
BUCK SPRING	7400	.0	+	+	30.5	125
CORONADO TRAIL	8400	.0	+	+	27.1	161
HANNAGAN MEADOWS	9020	- M	+	+	- M	- M
HEBER	7640	.0	+	+	25.8	87
MAVERIC						

CODE:203

Keyname: Precipitation -current water year, SNOTEL, daily, cummulative precipitation.

Source:CFS / SNOTEL

CFS menu path:CFS, DATABASE, WYSNO, CALLHP

Menu options:

DESCRIPTION:

Current water year, cummulative daily precipitation sensor values for SNOTEL sites and time period as specified by the user. This is a CFS option which connects the user directly to the SNOTEL minicomputer. The user should be familiar with SNOTEL commands. Data less than approximately 30 days will be unedited. This CFS option should be used to retrieve SNOTEL sensor values early in the morning before the data is transferred to the CFS computer (when there is a need for early AM SNOTEL precipitation data). After 9:30 AM PST, the data is available through the CFS, WYSNO option.

EXAMPLE:

8/17/87 19:30

TEKTRONIX REPORT FOR AR04

TIME : LAST 2 DAYS
TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED 'NN' IS A STRAIGHT VOLTAGE READING

SENS 1 SENS 2 SENS 3 SENS 4 SENS 5 SENS 6 SENS 7 SENS 8 SENS 9 SENS 10 SENS 11 SENS 12 SENS 13 SENS 14 SENS 15 SENS .

BUCK SPRING

DATE TIME BATT LV03 RH10 TR04 THAT TRIT TAVT
8708160506 1 12.7VV- 0.1VV 30.5VV 3.1VV
8708170715 1 12.7VV 0.0VV 30.5VV 9.2VV

MEDEA

DATE TIME BATT LV03 RH10 TR04 THAT TRIT TAVT
8708160451 1 13.1VV- 0.3VV 25.8VV 8.4VV 25.3VV 10.0VV 15.6VV
8708170339 1 13.1VV- 0.2VV 25.8VV 11.3VV 27.4VV 8.4VV 16.3VV

CODE:204

Keyname: Precipitation -SNOTEL, current water year, database
Source: CFS
CFS menu path: CFS, DATABASE, DBQ, WYSQ
Menu options: TABLE, LIST

DESCRIPTION:

Current water year SNOTEL database includes precipitation sensor values (sensor values are not edited for about the first 30 days). User specifies site name(s) and data is displayed using the TABLE command. WYSQ data can be stored in a user named file and can be graphed using the CFS GRAPHICS options. LIST command provides site locational information.

EXAMPLE: SNOTEL Sitename :,HEBER

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
1	0.0	3.0	6.3	8.5	12.9	16.6	19.3	19.9	21.1	21.6	23.4	
2	0.0	3.2	6.4	8.5	12.9	16.6	19.3	19.9	21.1	21.6	23.4	
3	0.0	3.7	6.4	8.5	12.9	16.6	19.4	19.9	21.1	21.6	23.5	
4	0.3	4.5	6.4	8.5	12.9	16.6	19.6	19.9	21.1	21.6	23.7	
5	0.3	4.5	6.4	8.6	12.9	16.6	19.7	19.9	21.1	21.6	24.2	
6	0.6	4.6	6.7	8.6	12.9	16.6	19.7	19.9	21.1	21.6	25.0	
7	0.7	4.6	7.8	8.6	12.9	16.6	19.7	20.0	21.2	21.6	25.1	
8	0.7	4.6	7.8	9.8	12.9	16.6	19.8	20.0	21.2	21.6	25.1	
9	0.9	4.6	7.8	9.8	12.9	16.6	19.8	20.0	21.2	21.6	25.1	
10	1.5	4.6	7.8	9.8	12.9	16.6	19.8	20.0	21.2	21.6	25.1	
11	1.9	4.6	7.8	9.8	12.9	16.6	19.8	20.1	21.2	21.6	25.5	
12	3.0	4.6	7.8	9.8	12.9	16.6	19.8	20.1	21.3	21.6	25.7	
13	3.0	4.6	7.8	9.8	12.9	16.6	19.8	20.1	21.3	21.6	25.9	
14	3.0	4.6	7.8	9.8	12.9	16.6	19.8	20.1	21.3	21.6	25.8	
15	3.0	4.6	7.8	9.8	12.9	16.6	19.9	20.2	21.3	21.5	25.9	
16	3.0	4.6	7.9	10.5	12.9	17.2	19.9	20.2	21.3	21.6	25.8	
17	3.0	4.6	8.0	11.1	12.9	17.5	19.9	20.2	21.3	21.7	25.8	
18	3.0	4.8	8.0	11.1	12.9	17.5	19.9	20.2	21.3	21.7		
19	3.0	5.9	8.0	11.1	12.9	17.7	19.9	20.2	21.3	21.7		
20	3.0	5.9	8.0	11.1	13.2	17.7	19.9	20.2	21.3	21.7		
21	3.0	5.9	8.5	11.1	13.2	17.8	19.9	21.0	21.3	21.7		
22	3.0	5.9	8.5	11.1	13.2	18.1	19.9	21.0	21.3	21.7		
23	3.0	6.1	8.5	11.1	13.2	18.6	19.9	21.0	21.3	21.7		
24	3.0	6.1	8.5	11.1	13.6	18.6	19.9	21.0	21.3	21.9		
25	3.0	6.1	8.5	11.1	15.8	18.7	19.9	21.0	21.3	21.9		
26	3.0	6.3	8.5	11.1	16.5	18.9	19.9	21.0	21.5	21.8		
27	3.0	6.3	8.5	11.5	16.6	19.0	19.9	21.0	21.5	21.8		
28	3.0	6.3	8.5	11.5	16.6	19.0	19.9	21.0	21.6	21.8		
29	3.0	6.3	8.5	11.5	---	19.0	19.9	21.0	21.6	22.0		
30	3.0	6.3	8.5	11.5	---	19.0	19.9	21.0	21.6	22.0		
31	3.0	---	8.5	12.9	---	19.1	---	21.0	---	23.1		
mean	2.2	5.1	7.8	10.3	13.5	17.5	19.8	20.4	21.3	21.7	24.9	
max	3.0	6.3	8.5	12.9	16.6	19.1	19.9	21.0	21.6	23.1	25.9	
min	.0	3.0	6.3	8.5	12.9	16.6	19.3	19.9	21.1	21.5	23.4	

CODE:205

Keyname: Precipitation -SNOTEL, daily, historical, archival database.

Source: USDA, Fort Collins Computer Center (S2K)

CFS menu path:

Menu options:

DESCRIPTION:

Archival database for historical SNOTEL data. Database is updated annually. User must be familiar with System 2000, database command structure. See CODE 104.

EXAMPLE:

TEKTRONIX REPORT

TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED "NN" IS A STRAIGHT VOLTAGE READING

	SNOW	PREC	TEMP	TMAX	TMIN	TAVG
BATEMAN (WY 84)						
DATE	TIME	SNOW	PREC	TEMP	TMAX	TMIN
831001		.0	.6	3.5	.0	.0
831002		.0	.6	.5	.0	.0
831003		.0	.6	-2.1	.0	.0
831004		.0	.6	-2.4	.0	.0
831005		.0	.6	1.2	.0	.0
831006		.0	.6	.6	.0	.0
831007		.0	.6	.7	.0	.0
831008		.0	.6	1.1	.0	.0
831009		.0	1.1	.3	.0	.0
831010		.0	1.1	2.1	.0	.0
831011		.0	1.1	-1.1	.0	.0
831012		.0	1.1	-4.8	.0	.0
831013		.0	1.1	-3.1	.0	.0
831014		.0	1.2	1.2	.0	.0
831015		.0	1.2	-4.2	.0	.0
831016		.0	1.2	-3.7	.0	.0
831017		.0	1.2	-2.4	.0	.0
831018		.2	1.3	.7	.0	.0
831019		.2	1.3	1.0	.0	.0
831020		.2	1.3	1.5	.0	.0
831106		.2	1.6	-2.6	.0	.0
831107		.2	1.6	.3	.0	.0
.						
.						
.						
831108		.3	1.6	-.2	.0	.0

CODE:206

Keyname: Precipitation -SNOTEL and NWS precipitation gage location information by state, county and SCS field office.

Source:CFS

CFS menu path:CFS, DATABASE, FLIP

Menu options:

DESCRIPTION:

CFS program provides site location information for all sites in the operational database. The program serves as a pre-processor to DBQ by providing a link between sites within a state and within the jurisdiction of an SCS field office. The user may download site location information for subsequent use.

EXAMPLE:

1. CFS DATABASE Sitename = EVENING STAR
2. Local SCS Field Office location(s).....
.....Cody / Jackson
3. County name (or other desig.).....Park
4. State FIPS code.....56
5. County FIPS code number029
6. CFS Data Type.....PRECIPITATION STATION
7. USGS - Hydrologic Unit Code number (HUC).....10070006
8. CFS Site Identification Number (I.D).....S405
9. Latitude (degrees and minutes).....44,39
10. Longitude (degrees and minutes).....109,47
11. Elevation (feet).....9200
12. SHEF CODE (Standard Hydrologic Exchange Format)....EVNN4

13. Section20
14. Township54N
15. Range107W

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

CODE:207

Keyname: Precipitation - SNOTEL site location information and sensor history.

Source: CFS

CFS menu path: CFS, DATABASE, SLIP

Menu options:

DESCRIPTION:

See CODE 110

EXAMPLE:

SITENAME	STATE STA. SHEF	ELEV.	LAT.	LONG.	HUC	SEM	YR
ATLANTA SUMMIT	ID 15F04S ATAI1	7580	4345	11514	17050111	1	1978
BANNER SUMMIT	ID 15E11S BASI1	7040	4418	11514	17050123	1	1980
BOSTETTER R.S.	ID 14G01S BTRII	7500	4210	11411	17040212	1	1980
DOLLARHIDE SUMMIT	ID 14F08S DHDII	8420	4336	11440	17040219	1	1981
FRANKLIN BASIN	ID 11G32S FRBI1	8040	4203	11136	16010202	1	1978
GALENA	ID 14F01S GLMI1	7440	4353	11440	17040219	1	1980
GALENA SUMMIT	ID 14F12S GLSI1	8780	4353	11443	17040219	1	1977
HILTS CREEK	ID 13E27S HLTII	8000	4401	11328	17040217	1	1980
HOWELL CANYON	ID 13G01S HWCII	7980	4219	11337	17040210	1	1978
HYNDMAN	ID 14F16S HYNI1	7440	4342	11410	17040219	1	1980
JACKSON PEAK	ID 15E09S JKPI1	7070	4403	11527	17050111	1	1980
MILL CREEK SUMMIT	ID 14E01S MLKI1	8800	4428	11429	17060201	1	1978
MOONSHINE	ID 13E06S MMSII	7440	4425	11325	17040217	1	1980
MORGAN CREEK	ID 14E04S MR6II	7600	4451	11416	17060201	1	1980
SLUG CREEK DIVIDE	ID 11G05S SL6II	7225	4234	11118	17040207	1	1978
STICKNEY MILL	ID 14F02S STMII	7430	4352	11413	17040218	1	1980
SWEDE PEAK	ID 13F09S SWPI1	7640	4337	11358	17040221	1	1978
TRINITY MTN.	ID 15F05S TRMI1	7770	4338	11526	17050113	1	1978
VIENNA MINE	ID 14F04S VMMI1	8960	4348	11451	17060201	1	1978
WHITE ELEPHANT	ID 11E36S WHEII	7710	4432	11125	17040202	1	1981

CODE:208

Keyname:Precipitation -SNOTEL site location

Source:CFS

CFS menu path:CFS, DATABASE, DBQ,

Menu options:LIST, FLIST

DESCRIPTION:

CFS, SNOTEL precipitation gage site location routine.
FLIST option creates a user named file with site location
information which can be downloaded from the UTIL menu.

EXAMPLE:

No. ST CTY Type HUC Station Lat. Long. Elev. Sitename

1 53 077 SMOT 17030002 21C38S 4647 12120 4600 BUMPING RIDGE
2 53 007 SMOT 17020009 20A12S 4827 12055 4600 PARK CREEK RIDGE
3 53 059 SMOT 17080002 21C13S 4606 12145 4250 SURPRISE LAKES
4 53 037 SMOT 17020011 20B02S 4721 12041 4270 BLEWETT PASS
5 53 063 SMOT 17020010 20B07S 4717 12022 4400 UPPER WHEELER
6 53 007 SMOT 17020009 20A09S 4834 12043 4780 RAINY PASS
7 53 059 SMOT 17080002 22C01S 4613 12209 4400 PLAINS OF ABRAHAM
8 53 077 SMOT 17080004 21C14S 4618 12130 4500 POTATO HILL
9 53 047 SMOT 17020006 19A02S 4840 11950 4500 SALMON MEADOWS
10 53 033 SMOT 17110009 21B01S 4744 12105 4070 STEVENS PASS
11 53 077 SMOT 17030002 21C28S 463B 12123 4500 WHITE PASS E.S.
12 53 059 SMOT 17080004 22C08S 4620 12203 4800 STRAWBERRY LANDING
13 53 015 SMOT 17080005 22C10S 4611 12215 4030 SHEEP CANYON
14 53 037 SMOT 17030001 21B51S 4722 12103 4200 SASSE RIDGE
15 53 063 SMOT 17010305 17B04S 4752 11705 4700 QUARTZ PEAK

CODE:209

Keyname: Precipitation - SNOTEL, historical database for previous water years.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ

Menu options:TABLE, CARDS, PRELUDE

DESCRIPTION:

Historical, period of record, SNOTEL precipitation gage data. Data may be accessed in several different formats (listed under options). Data can be saved to user named file and downloaded under the UTIL menu.

EXAMPLE:

Station : 18D19S, HIGH RIDGE

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
	---	---	---	---	---	---	---	---	---	---	---	---
1	0.0	1.1	9.4	19.3	27.4	31.1	43.6	48.6	54.1	58.6	58.6	60.7
2	0.0	1.3	9.4	19.3	27.4	31.1	43.6	48.8	54.1	58.6	58.7	60.7
3	0.0	1.6	9.4	19.6	27.4	31.2	43.9	49.3	54.1	58.6	58.7	60.7
4	0.0	1.8	9.4	21.1	27.4	31.5	43.9	50.2	54.1	58.6	59.3	60.7
5	0.0	2.4	9.8	21.1	27.4	32.1	43.9	50.2	54.8	58.6	59.3	60.9
6	0.0	2.4	10.7	21.1	27.4	32.7	44.3	50.7	55.4	58.6	59.3	61.2
7	0.0	2.9	11.8	21.1	27.4	33.3	44.3	50.7	55.8	58.6	59.3	61.2
8	0.0	3.6	12.4	21.1	27.4	34.0	44.3	50.7	56.8	58.6	59.3	61.3
9		3.6	12.5	21.3	27.4	34.7	45.1	50.7	56.9	58.6	59.3	61.5
10	0.1	3.7	13.0	21.3	27.4	35.0	45.3	50.8	57.5	58.6	59.3	61.5
11	0.1	3.9	13.5	21.3	27.5	35.2	46.2	50.8	57.7	58.6	59.3	61.7
12	0.1	4.0	13.8	21.3	27.5	35.4	46.4	51.5	57.7	58.6	59.3	61.7
13	0.1	4.1	13.9	21.3	27.5	35.4	46.7	51.5	57.7	58.6	59.3	61.7
14	0.1	4.4	14.9	21.3	28.7	35.4	46.8	51.7	57.7	58.6	59.3	61.7
15	0.1	4.4	15.4	21.6	28.8	37.4	46.8	51.7	57.7	58.6	59.3	61.7
16	0.1	5.2	15.8	21.8	28.8	37.9	46.8	51.9	57.7	58.6	59.3	61.7
17	0.1	5.5	15.8	21.8	28.8	38.1	46.8	52.0	57.7	58.6	59.3	61.7
18	0.1	6.1	15.8	22.1	28.8	38.2	46.8	52.1	57.7	58.6	59.3	61.7
19	0.1	6.3	15.8	22.5	29.1	38.6	47.2	52.1	57.7	58.6	59.3	61.7
20	0.1	6.5	15.8	22.5	29.1	39.2	47.5	52.1	57.7		59.3	61.7
21	0.1	6.7	16.0	22.5	29.2	39.2	47.5	52.2	58.3	58.6	59.3	61.7
22	0.1	7.0	16.0		29.2	40.0	47.5	52.2	58.4	58.6	59.3	61.7
23	0.4	7.0	16.6	22.6	29.2	41.1	47.5	52.6	58.6	58.6	59.3	62.3
24	0.6	7.6	16.8	22.6	29.3	41.3	47.5	52.9	58.6	58.6	59.3	62.6
25	0.6	8.1	16.8	26.4	29.4	41.4	47.7	52.9	58.6	58.6	59.3	62.6
26	0.6	8.2	17.3		29.4	41.4	47.9	53.3	58.6	58.6	59.3	63.2
27	0.6	8.2	17.3	26.7	30.5	42.8	48.0	53.8	58.6	58.6	59.3	63.2
28	0.6	8.4	17.5	26.7	30.8	42.9	48.2	53.8	58.6	58.6	59.3	63.3
29	0.6	9.1	17.5	26.7	30.9	43.2	48.2	53.8	58.6	58.6	59.3	63.3
30	0.6	9.4	18.8	26.7	---	43.5	48.2	54.0	58.6	58.6	59.3	63.3
31	0.6	---	19.3	27.1	---	43.6	---	54.1	---	58.6	59.3	---
mean	0.2	5.2	14.5	22.5	28.5	37.4	46.3	51.7	57.2	58.6	59.2	61.8
max	0.6	9.4	19.3	27.1	30.9	43.6	48.2	54.1	58.6	58.6	59.3	63.3
min	0.0	1.1	9.4	19.3	27.4	31.1	43.6	48.6	54.1	58.6	58.6	60.7

CODE:210

Keyname: Precipitation -SNOTEL, previous water year precipitation gage data by state -Annual Summary.

Source: State Annual Data Summary -publication.

CFS menu path:

Menu options:

DESCRIPTION:

Monthly SNOTEL precipitation gage data for previous water year. Annual Data Summary is published near the first of the year, by state. See also CODE 213

EXAMPLE:

Monthly Precipitation - WY 1986 (inches)

SNOTEL SITE NAME	ELEV (ft)	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV
MIDDLE POWDER	7760	1.4	1.9	1.6	2.1	2.7	2.8	3.9	2.6	2.8	1.2	.9
NEW YORK LAKE	8340	1.7	3.3	2.0	6.9	.7	2.4	2.8	.6	1.7	1.1	2.2
NORTH FRENCH CREEK	10100	4.3	8.8	5.3	4.9	6.0	4.2	7.0	2.3	2.7	2.9	3.1
MOROOGO	8600	4.2	1.6	1.7	2.0	1.8	2.2	2.8	1.3	.7	.1	2.0
OLO BATTLE	10000	5.8	12.7	6.2	6.8	10.3	6.2	7.8	2.8	3.6	2.2	1.0
BUL CREEK	8975	1.1	1.3	.5	.4	2.9	1.0	3.8	2.8	1.1	.7	.9
PARKER PEAK	9400	2.3	4.2	2.0	2.7	5.2	2.0	3.6	2.9	2.0	4.1	1.5
PHILLIPS BENCH	8200	3.3	8.7	3.3	3.6	15.9	3.8	6.6	6.3	.6	1.4	2.1
POWDER RIVER PASS	9480	2.1	2.6	1.4	2.6	3.7	2.3	3.7	2.2	2.3	1.0	.9
REED HILL	8400	2.0	4.2	1.3	2.1	1.9	3.8	7.1	1.4	5.8	1.3	.6
SALT RIVER SUMMIT	7600	2.0	6.0	1.7	2.7	11.3	1.0	6.7	1.8	.6	1.1	.6
SAND LAKE	10080	4.1	8.1	3.1	3.1	6.0	3.2	7.3	2.2	6.8	1.8	3.1
SUBSTONER BS	8150	.8	6.5	3.5	1.7	5.6	3.4	3.8	2.0	.9	1.9	1.8
SHELL CREEK	9580	1.8	2.6	2.0	2.9	3.5	1.9	3.6	2.6	2.1	1.2	4.1
SPIDER 865IM	8250	1.8	9.8	1.3	2.7	9.8	1.7	3.0	2.5	.2	1.7	.9
SOUTH BRUSH CREEK	8400	3.3	6.2	2.0	2.2	3.9	2.0	6.1	2.0	3.1	1.2	.9
SOUTH PASS	9040	2.4	6.7	2.3	3.1	12.3	3.0	6.2	3.7	1.5	1.4	2.6
SPRING CREEK DIVIDE	9000	3.1	9.6	3.0	4.2	14.8	4.0	6.8	3.3	.6	2.1	3.3
ST. LAWRENCE	8400	1.8	6.0	2.0	1.5	3.2	2.0	6.7	3.3	1.2	1.6	1.2
ST. LAWRENCE ALT	8620	.8	3.2	2.1	1.0	3.7	1.5	3.0	2.0	.9	1.2	1.0
SUCKER CREEK	8800	1.9	1.2	3.4	1.9	3.5	3.4	6.2	2.3	3.0	1.6	.7
SYLVAN LAKE	8420	2.0	8.1	3.4	3.8	10.2	3.4	3.9	2.3	2.1	3.6	3.8
TOGHOTEE PASS	9580	3.0	5.4	2.4	3.1	10.0	3.6	3.9	3.7	.1	3.5	3.6
TOWNSEND CREEK	8700	.9	6.6	3.0	1.0	6.2	2.2	5.0	2.7	1.2	.7	1.3
TRIPLE PEAK	8300	3.6	8.4	2.6	6.6	17.4	2.6	3.6	4.4	.1	.8	1.0
TROUT CR	8400	1.2	3.6	.5	1.1	6.7	1.4	3.4	1.2	2.7	2.0	1.6
TWO OCEAN PLATEAU	9360	4.7	6.6	2.6	5.2	14.1	3.2	3.0	3.2	1.9	2.7	2.1
WARREN PEAK	8520	1.1	3.1	3.0	.7	1.0	1.6	6.0	3.4	4.6	1.5	6.3
WEBBER SPRINGS	9200	4.2	9.2	2.3	2.6	11.0	3.8	6.4	2.6	1.3	.6	4.9
WHISKEY PARK	8950	---	---	---	---	---	---	---	---	---	---	---
WILLOW CREEK	8450	3.3	10.8	3.2	6.7	13.1	3.6	8.8	3.4	.3	1.9	1.8
WINDOT PEAK	7840	1.1	4.2	1.7	.8	2.7	2.0	4.6	1.7	3.8	1.1	.7
WOLVERINE	7650	1.9	3.1	2.3	2.2	6.3	1.6	6.0	1.6	1.6	3.0	2.2
YOUNTS PEAK	8350	3.2	3.6	1.7	3.0	9.4	2.2	3.0	2.1	.8	4.0	2.3

CODE:211

Keyname: Precipitation - SNOTEL 25 year precipitation gage averages by state -annual summary.

Source: State Annual Data Summary - publication

CFS menu path:

Menu options:

DESCRIPTION:

SNOTEL 25 year average monthly precipitation gage data (published by each state) as part of the Snow Survey Program, Annual Data Summary. Summary is also available for computer access on the CFS (see CODE 213). Publication is normally available near the first month of the succeeding calendar year.

EXAMPLE:

Monthly Precipitation Averages: 1961-1985 (inches)

SNOTEL SITE NAME	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	TOTAL	
PIBBLE PONDER	7780	2.0	2.1	2.0	1.8	2.2	2.7	2.0	3.1	2.4	2.2	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	26.3	
NEW YORK LAKE	8360	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
NORTH FRENCH CREEK	10700	3.6	3.9	3.3	4.3	3.6	3.6	4.3	4.0	3.9	2.6	1.9	2.6	1.9	2.2	1.9	2.2	1.9	2.2	1.9	2.2	63.6	
NOVOSO	8400	1.3	1.1	1.0	1.0	1.0	1.3	1.7	2.1	1.9	1.6	1.0	1.6	1.0	1.7	1.3	1.6	1.0	1.7	1.3	1.6	16.8	
OLD BATTLE	10000	3.8	3.9	7.5	6.0	6.5	7.6	6.8	6.8	7.7	7.3	7.3	7.3	7.3	7.6	7.6	7.6	7.6	7.6	7.6	7.6	57.9	
OWL CREEK	6975	1.0	1.0	1.0	1.0	1.0	1.4	1.9	2.3	1.7	1.3	1.0	2.7	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	15.3
PARKER PEAK	9400	2.9	2.8	2.6	2.7	2.2	2.6	2.5	3.3	3.0	3.0	3.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	53.6
PHILLIPS BEACH	6200	2.9	4.8	7.3	6.0	6.0	6.9	3.0	3.0	2.0	2.0	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	41.9
POUDRE RIVER PASS	9480	1.9	1.8	1.8	2.3	1.5	2.2	2.2	3.2	3.2	2.9	1.3	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	23.6
RENO HILL	8400	2.8	2.8	2.5	2.6	2.0	4.5	4.1	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	31.2
SALT RIVER SUMMIT	7800	1.9	2.6	3.8	6.1	2.8	2.1	1.3	1.7	1.7	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	26.3
SAND LAKE	10080	3.8	3.9	5.0	2.9	3.7	5.8	4.6	4.4	2.0	1.8	1.8	1.8	1.8	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	40.8
SANDSTONE BS	8150	5.1	5.1	6.0	5.2	5.3	6.0	2.8	3.6	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	30.9
SHELL CREEK	9580	2.0	2.3	2.4	2.7	2.4	2.4	2.7	2.9	3.5	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	29.1	
SHILOH BASIN	8230	3.4	3.3	5.9	2.6	1.8	1.2	1.1	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	20.9
SOUTH BRUSH CREEK	8400	2.9	2.5	2.6	2.4	2.4	1.4	2.8	2.6	4.2	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	26.3
SOUTH PASS	9440	2.7	2.7	2.9	5.1	2.5	2.5	5.0	6.7	6.7	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	35.5
SPRING CREEK DIVIDE	9000	2.2	3.5	5.7	6.0	5.2	3.2	3.9	2.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	31.2
ST. LAWRENCE	8400	1.6	2.0	2.1	2.2	1.7	1.7	2.2	2.9	5.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	26.3
ST. LOURENCE ALT	8420	1.6	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	21.0
SUCKER CREEK	8400	2.2	1.8	2.1	2.0	1.8	2.6	3.1	3.0	2.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	27.6
STYLMAN LAKE	8420	3.2	3.4	3.8	3.9	3.9	3.2	3.5	3.0	4.1	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	39.9
TOGHOTEE PASS	9360	2.9	4.9	5.3	5.6	3.6	3.9	6.2	2.6	2.6	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	40.7
TOHOMENO CREEK	8700	1.9	1.9	2.1	2.0	1.8	1.8	2.8	3.6	3.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	23.8
TRIPLE PEAK	8500	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
TROUT CR	8400	1.6	2.1	2.3	1.8	1.6	1.6	2.2	3.0	2.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	26.8
TUG OCEAN PLATEAU	9360	3.4	4.9	6.3	8.2	4.0	6.3	3.3	3.9	6.5	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	48.6
URBON PEAK	6520	1.6	1.2	1.1	1.1	1.1	1.1	1.8	2.3	2.9	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	22.0
WEBCON SPRINGS	9200	4.2	4.5	6.1	6.4	5.3	5.5	5.5	3.6	4.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	42.0
WHISKEY PARK	8950	3.2	3.1	5.9	3.5	2.8	6.7	3.5	3.8	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	36.4
WILLOW CREEK	8430	3.6	4.8	6.0	4.0	4.3	6.0	2.0	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	48.0
WINDY PEAK	7840	1.8	1.7	1.5	1.9	1.9	2.6	2.6	4.0	4.0	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	21.8
WOLVERINE	7450	2.0	2.6	2.7	2.5	2.0	1.8	2.1	3.1	2.8	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	20.0
YOUNTS PEAK	8350	2.2	3.3	3.6	5.6	2.8	5.0	2.3	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	33.3

CODE:212

Keyname: Precipitation -SNOTEL, previous water year,
precipitation gage data by state -annual summary.

Source:CFS

CFS menu path:CFS, PRODUCTS, ADS

Menu options:PREC

DESCRIPTION:

SNOTEL, previous water year, precipitation gage data by
state. Accessed via the CFS (see CODES 210 & 211).

EXAMPLE:

MONT SNOTEL/STORAGE PRECIPITATION

STORAGE GAGE										
SITENAME		OCT NOV DEC JAN FEB MAR								
APR	MAY JUNE JULY AUG SEPT TOTAL									
	ALLEN, FA RANCH		1.55	2.79	1.45	1.50	2.15	1.25		
4.38	1.46 3.62 4.07	2.51	3.26 29.99							
	ASHLEY DIVIDE		2.50	3.20	.30	2.60	3.60	.10		
2.50	2.70 1.80 1.50	.90	3.80 25.50							
	ASHLEY LAKE		2.60	3.10	.40	.80	5.10	.00		
2.20	2.40 1.60 1.40	.70	3.20 23.50							
	BADGER PASS		8.70	6.40	2.60	6.00	9.40	4.10		
3.50	3.90 2.30 1.70	3.60	6.40 58.60							
	BANFIELD MTN		5.60	5.26	.88	4.94	4.90	2.16		
2.26	3.76 1.76 1.90	.82	3.05 37.29							
	BARKER LAKES		2.40	2.30	1.10	2.60	5.00	2.50		
3.70	5.00 3.80 4.10	3.30	3.60 39.40							
	BASIN CREEK		1.10	2.30	.50	1.00	2.40	1.70		
3.80	4.30 2.00 2.50	2.50	3.30 27.40							
	BEAGLE SPRINGS		1.40	2.90	1.10	.80	2.80	1.70		
3.00	4.30 2.00 1.80	2.10	2.80 26.70							
	BEAR PAW SKI AREA		1.20	.80	.80	.60	1.00	.80		
1.20	6.80 2.50 2.20	.80	7.00 25.70							
	BEAVER CREEK		2.50	4.00	2.00	2.80	6.50	3.70		
	3.60									

CODE:213

Keyname: Precipitation -SNOTEL, 25 year average, monthly precipitation gage values -annual summary.

Source: CFS

CFS menu path:CFS, PRODUCTS, ADS

Menu options: PREC AVG

DESCRIPTION:

SNOTEL, 25 year average, monthly precipitation gage data, by state, accessed by computer from the CFS. Available annually, near the first month of the succeeding year. Also available as published material in the Snow Survey Program, Annual Data Summary (see CODES 210, 211, and 212).

EXAMPLE:

MT SNOTEL/STORAGE PRECIPITATION AVERAGES

CODE:214

Keyname: Precipitation -SNOWTEL and other precipitation gage location map.

Source: Snow Survey Program Annual Data Summary publication (by state).

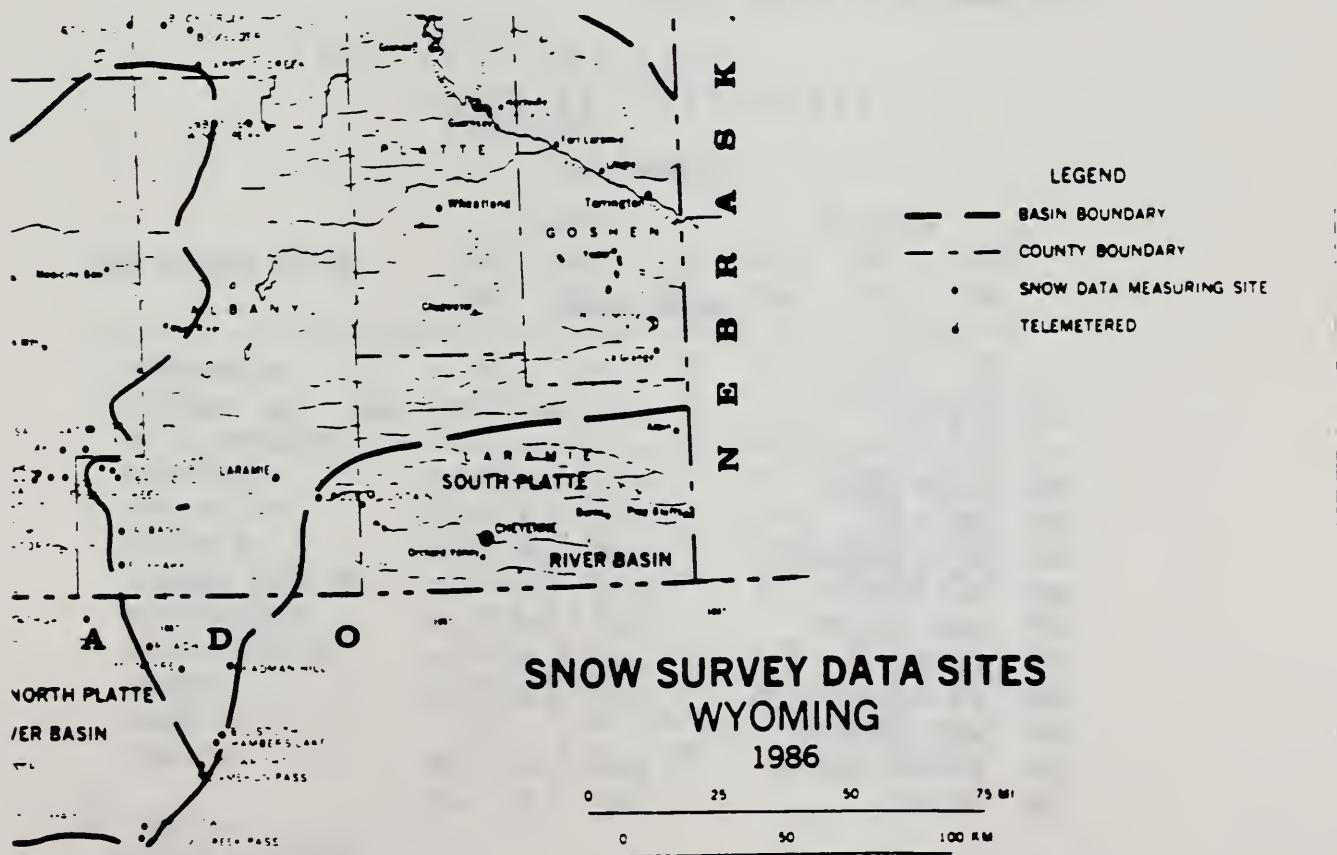
CFS menu path:

Menu options:

DESCRIPTION:

State, Snow Survey Data Site map showing and describing all state snow survey data site locations (including precipitation gage locations). Provided as insert in state Annual Data Summary publication which is published near the first month of each year. Publications are available at state, SCS, Snow Survey Program office.

EXAMPLE:



CODE:215

Keyname: Precipitation -Current water year, National Weather Service precip. gage, monthly data, by state.

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, PREC

Menu options:LI

DESCRIPTION:

Current water year precipitation station list and monthly precipitation (inches), for selected stations used in water supply forecasting (by state). May be accessed under the USA or COMB (multi-state basin) options. The COMB option should usually be selected using the LI option. See also CODES 216 and 217.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 16:28:37

P R E C I P I T A T I O N D A T A

FEBRUARY 1987

M O N T H L Y V A L U E S

IDENT	STATION	FEB	MAR	APR	MAY	JUN	JUL
0438	ARTHUR 4MM,NV	0.93	1.30	0.13			
0507	AUSTIN,NV	1.43	4.18	0.65			
0691	BATTLE MOUNTAIN,NV	1.45	0.95	0.35			
S049	BEAR CREEK,NV	3.70	5.20	0.60	4.10	1.10	1.30
S223	BERRY CREEK,NV	2.60	4.20	1.70			
S231	BIG BEND,NV	1.10	1.90	1.10			
S344	BIG CREEK SUMMIT,NV	3.30	5.80	1.60			
4H02	BOIES RESERVOIR						
S345	BUCKSKIN LOWER,NV	2.60	2.10	0.50			
1358	CALIENTE	1.43	1.55	0.22			

*** PAUSE ***

NEW-LINE to CONTINUE
E then NEW-LINE to END

CODE:216

Keyname: Precipitation -Comparison of current water year precipitation gage data with historical data.

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, PREC

Menu options:LO

DESCRIPTION:

Comparison of requested month and cumulative, year to date precipitation gage data with the previous water year and the current 25 year avg. Note that this LO option is available under the USA, CANA, and COMB options. Use the COMB option to review multi-state basin precipitation stations.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 16:29:36

P R E C I P I T A T I O N D A T A

FEBRUARY 1987

PRECIPITATION STATION	JANUARY			YR TO DATE		
	THIS YEAR	LAST YEAR	61-85 AVG	THIS YEAR	LAST YEAR	61-85 AVG
ARTHUR 4NW,NV	.92	.59	1.55	1.79	5.06	6.33
AUSTIN,NV	.60	.12	1.23	1.11	5.77	4.60
BATTLE MOUNTAIN,NV	.73	.19	.67	1.18	2.27	3.16
BEAR CREEK,NV	3.00	2.70	3.70	6.70	12.60	15.70
BERRY CREEK,NV	2.00	.60	2.50	5.20	9.98	10.70
BIG BEND,NV	1.50	1.90	2.80	3.40	9.20	8.80
BIG CREEK SUMMIT,NV	1.60	10.16	2.00	3.80	20.56	9.20
BOIES RESERVOIR	N O R E P O R T					
BUCKSKIN LOWER,NV	2.30	1.80	3.20	5.40	9.10	9.70
CALIENTE	1.28	.35	.77	2.02	3.14	3.04
CARSON CITY	1.97	.76	2.15	2.25	3.86	6.32
CEDAR PASS	3.00	3.10	4.90	9.20	13.60	18.00

*** PAUSE ***

NEW-LINE to CONTINUE

E then NEW-LINE to END

CODE:217

Keyname: Precipitation -SCS Snow Survey Program standard period, monthly precipitation averages, by state or basin
Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, PREC

Menu options:LI-

DESCRIPTION:

Precipitation station list with average monthly precipitation (inches) for requested month and 5 succeeding months. This option is available under USA, CANA and COMB. Use COMB (combined -multi-state basin) option whenever possible.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 16:30:15

P R E C I P I T A T I O N D A T A

FEBRUARY 1987

M O N T H L Y A V E R A G E S

IDENT	STATION	FEB	MAR	APR	MAY	JUN	JUL
0438	ARTHUR 4NW,NV	1.40	1.54	1.19	1.35	1.19	0.74
0507	AUSTIN,NV	1.18	1.72	1.72	1.57	1.38	0.63
0691	BATTLE MOUNTAIN,NV	0.69	0.72	0.88	1.09	1.21	0.63
S049	BEAR CREEK,NV	3.80	5.20	3.70	3.30	3.10	0.80
S223	BERRY CREEK,NV	2.90	2.90	4.40	2.70	1.80	1.90
S231	BIG BEND,NV	1.70	1.90	1.50	1.70	1.90	0.60
S344	BIG CREEK SUMMIT,NV	3.20	3.70	2.80	3.00	1.90	1.10
4H02	BOIES RESERVOIR						
S345	BUCKSKIN LOWER,NV	2.90	3.10	1.70	2.20	2.60	0.40
1358	CALIENTE	0.86	1.26	0.79	0.66	0.27	1.07

*** PAUSE ***

NEW-LINE to CONTINUE

E then NEW-LINE to END

CODE:218

Keyname: Precipitation -Current water year, basin precipitation -comparison with previous years.

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, ANAL, PREC

Menu options:BSPR

DESCRIPTION:

Basin wide precipitation gage values (inches) for user selected month, for gages which are used in water supply forecasting. Values are compared with previous year and 25 year average. Cumulative (water year to selected month) values (inches) are also displayed. This option is available under the USA, COMB, and CANA options. Use the COMB option whenever possible since it provides values for stations within multi-state areas.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 16:33:20

BASIN-WIDE
PRECIPITATION DATA SUMMARY

MARCH 1987

BASIN PRECIPITATION STATION	FEBRUARY			YR TO DATE		
	THIS YEAR	LAST YEAR	61-85 AVG	THIS YEAR	LAST YEAR	61-85 AVG
<hr/>						
HUMBOLDT BASIN						
ARTHUR 4MM, NV	.93	3.51	1.40	2.72	8.57	7.73
AUSTIN, NV	1.43	1.17	1.18	2.54	6.94	5.78
BATTLE MOUNTAIN, NV	1.45	1.98	.69	2.63	4.25	3.85
BIG CREEK SUMMIT, NV	3.30	4.00	3.20	7.10	24.56	12.40
BUCKSKIN LOWER, NV	2.60	5.50	2.90	8.00	14.60	12.60
CORRAL CANYON, NV	2.90	5.70	3.20	9.30	16.50	17.60

*** PAUSE ***

NEW-LINE to CONTINUE

E then NEW-LINE to END

CODE:219

Keyname: Precipitation -Current water year, basin precipitation compared with historic precipitation
Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, ANAL,
Menu options:BAPR

DESCRIPTION:

Percentage comparison of precipitation data used in water supply forecasting, for beginning of user selected month by state, or multi-state basin. This option is available under the USA, CANA, and COMB options. The COMB option includes stations within basins, regardless of state boundaries. The USA option includes only stations within basins within the selected state. The user is advised to use the COMB option whenever possible. See CODES 215, 216, 217, and 218.

EXAMPLE:

DATA CURRENT AS OF: 8/17/87 16:34: 2

BASIN-WIDE
PRECIPITATION SUMMARY

FEBRUARY 1987

BASIN PRECIPITATION STATION	JANUARY PERCENT OF AVERAGE	JANUARY PERCENT OF LAST YEAR	WATER YEAR PERCENT OF AVERAGE	WATER YEAR PERCENT OF LAST YEAR
S354 IS NOT ON FILE				
WELLS	54.0	113.0	27.0	34.0
HUMBOLDT BASIN-WEATHER SERVICE				
AUSTIN,NV	49.0	500.0	24.0	19.0
BATTLE MOUNTAIN,NV	109.0	384.0	37.0	52.0
DEETH	109.0	379.0	48.0	48.0
ELKO,NV	52.0	300.0	20.0	25.0
EMIGRANT PASS,NV	45.0	132.0	24.0	29.0

*** PAUSE ***
NEW-LINE to CONTINUE
E then NEW-LINE to END

CODE:220

Keyname: Precipitation -Historical monthly precipitation values for NWS and SCS precipitation gages.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (PREC)

Menu options:TABLE, CARDS, PRELUDE

DESCRIPTION:

Historical monthly precipitation (inches) for period-of-record for site(s) selected by user. Data may be sent to a retrievable file (accessed under the UTIL menu) or displayed on terminal screen. Use the TABLE option for screen reading of tabular data, or the CARDS or PRELUDE options for machine processing of tables. See CODE 221 also.

EXAMPLE: Station : 1165, BUFFALO
----- Unit = inches

yr	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	SUM
60	1.80	0.80	0.15	0.05	0.43	0.30	0.60	0.93	0.64	0.31	1.26	0.25	7.52
61	0.52	0.80	0.60	0.05	0.68	0.75	1.25	2.48	0.83	0.71	0.53	2.35	11.55
62	3.00	0.56	0.20	0.88	0.61	0.60	0.90	2.62	2.86	2.25	0.52	1.77	16.77
63	0.60	0.90	0.50	1.07	0.90	0.20	5.47	1.38	6.12	0.61	1.35	0.93	20.03
64	0.60	0.30	0.73	1.45	0.96	0.65	2.43	1.84	3.84	0.52	0.31	0.08	13.71
65	0.70	1.85	0.64	0.83	0.40	0.40	0.25	2.50	2.37	1.02	0.24	0.91	12.11
66	0.01	0.10	E0.05	0.25	0.15	1.35	3.05	0.33	0.55	0.35	0.39	3.31	9.89
67	0.81	0.48	0.40	0.60	1.18	0.90	0.83	4.73	6.55	0.78	0.25	2.65	20.16
68	0.83	E0.57	0.83	0.96	0.62	0.82	1.08	2.12	4.72	0.87	2.58	1.65	17.65
69	0.55	0.39	0.91	0.75	0.15	0.17	0.67	0.92	3.95	0.82	0.14	0.30	9.72
70	0.97	1.44	0.21	0.40	0.29	1.54	2.36	2.98	1.87	0.83	0.00	1.01	13.90
71	0.37	0.56	0.38	0.34	0.97	0.33	E3.69	2.80	1.45	0.45	0.49	0.47	12.30
72	3.58	0.32	0.02	E2.00	E1.86	0.92	1.01	2.52	1.39	2.90	0.94	0.47	17.93
73	0.47	E0.43	E0.48	E0.48	E0.33	1.08	2.95	0.64	1.32	2.38	0.92	2.65	14.13
74	0.42	0.92	0.17	0.53	0.07	0.58	1.40	1.40	0.58	0.15	1.05	0.65	7.92
75	3.36	0.27	0.09	0.53	0.19	0.65	1.38	2.60	4.62	1.09	0.32	0.07	15.17
76	0.86	0.46	0.72	0.22	0.57	0.27	3.89	1.24	1.67	2.55	1.94	1.30	15.69
77	0.69	0.55	0.16	1.08	0.10	2.07	0.52	2.22	2.44	1.25	0.67	0.46	12.21
78	0.76	0.63	1.08	0.91	0.86	0.08	2.27	7.86	0.67	1.61	1.10	2.00	19.83
79	0.28	0.43	0.77	E0.32	0.10	0.08	0.98	2.57	1.16	2.78	1.65	0.27	11.39
80	0.90	0.29	0.02	0.17	0.53	1.07	0.46	5.74	0.67	0.23	1.04	1.74	12.86
81	0.63	0.84	0.59	0.06	0.52	0.64	0.16	5.99	0.66	1.77	0.55	0.62	13.03
82	0.49	0.00	0.35	E0.33	0.22	1.23	0.89	1.17	3.34	1.87	1.31	4.83	16.03
83	1.07	0.00	1.40	0.00	0.10	0.38	0.68	1.67	1.36	0.22	0.89	0.34	8.11
84	1.40	1.22	0.35	0.50	0.23	0.48	3.82	1.44	1.92	2.23	0.73	1.49	15.81
85	0.04	0.20	0.25	0.58	0.13	0.29	1.01	1.86	1.61	1.59	0.46	1.46	9.48
86	0.48	1.11	0.67	0.39	0.45	0.96	0.79	1.33	2.37	0.59	0.44	4.90	14.48

all
years

ave 0.97 0.61 0.47 0.58 0.50 0.70 1.66 2.44 2.28 1.21 0.82 1.44 13.68
yrs (27) (27) (27) (27) (27) (27) (27) (27) (27) (27) (27) (27) (27) (27)

1961-1985 average :

0.96 0.58 0.48 0.61 0.51 0.70 1.74 2.54 2.34 1.27 0.81 1.35 13.90
yrs (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25)

CODE:221

Keyname: Precipitation -Historical, monthly precipitation
gage data for period-of-record -132 column format.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (PREC)

Menu options:TABLE132

DESCRIPTION:

Historical monthly and annual precipitation values (inches)
for precipitation stations which are used in Snow Survey
Program streamflow forecasting. The TABLE132 format
provides a 132 column display or printout of the data (see
CODE 221).

EXAMPLE:

Station Name : ALDER RUBY DAM

ID Number = 0115
Datatype = PREC
Elevation = 5290 Ft.
Latitude = 45 Deg. 15 Min.
Longitude = 112 Deg. 07 Min.
HUC #, Name = 10020003, Ruby
County = Madison, Montana

yr	October	November	December	January	February	March	April	May	June	July	August	September	---
81					0.86	1.73	1.94	4.91	2.41	0.34	0.27	1.14	***
82	1.64	0.59	0.52	0.46	0.40	1.78	1.37	2.09	2.08	1.10	1.53	1.68	
83	0.94	0.66	0.90	0.08	1.05	0.89	0.63	1.40	4.22	2.09	2.87	2.08	
84	2.38	2.81	1.77	0.10	0.65	1.35	1.00	1.71	2.64	2.72	1.84	1.35	
85	0.93	0.62	0.22	0.25	0.10	0.78	0.46	2.24	0.69	1.09	1.86	2.05	
86	0.53	0.53	0.26	0.34	0.49	0.54	1.49	1.06	2.72	1.52	1.46	1.57	
all years													
ave	1.28	1.04	0.73	0.25	0.59	1.18	1.15	2.24	2.46	1.48	1.64	1.65	
yrs	(5)	(5)	(5)	(5)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	
1961-1985 average :													
	1.47	1.17	0.85	0.22	0.61	1.31	1.08	2.47	2.41	1.47	1.67	1.66	
yrs	(4)	(4)	(4)	(4)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	(5)	

Note : Units are in inches.

CODE:222

Keyname: Precipitation -Historical, daily precipitation for selected NOAA CLIMATE stations.

Source: CFS (from NCDC tapes)

CFS menu path: CFS, DATABASE, DBQ, (CLIM)

Menu options: TABLE, CARDS, PRELUDE

DESCRIPTION:

Daily, historic precipitation data (inches) for selected NOAA CLIMATE stations in the western states. Daily data are used in streamflow forecast modeling and for SCS field planning and application. Data may be sent to user named file and subsequently downloaded under the CFS, UTIL menu. TABLE option is designed for easy review on display. CARDS and PRELUDE options are better adapted to machine processing of tabular data.

EXAMPLE: Station : 1008, BRYCE CANYON MP HQD
----- Unit = inches

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
---	---	---	---	---	---	---	---	---	---	---	---	---
1	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00
2	0.60	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
3	0.31	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00
4	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8	0.00	0.12	0.11	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
11	0.02	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00	0.50
12	0.53	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00
14	0.12	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.00
15	0.00	0.00	0.05	0.00	0.00	0.30	0.00	0.00	0.00	0.00	0.00	0.00
16	0.00	0.00	0.61	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
17	0.25	0.00	0.00	0.00	0.00	0.46	0.00	0.00	0.00	0.15	0.00	0.00
18	0.15	0.00	0.00	0.00	0.00	0.46	0.67	0.00	1.03	0.00	0.48	
19	0.00	0.00	0.15	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00
20	0.00	0.00	0.92	0.00	0.00	0.00	0.08	0.00	0.20	0.00	0.01	
21	0.02	0.00	0.00	0.00	0.31	0.00	0.16	0.00	0.05	0.00	0.00	
22	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	0.00	0.00	
23	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
25	0.00	0.20	0.00	0.00	0.00	0.00	0.02	0.20	0.00	0.00	0.00	
26	0.00	0.07	0.00	0.01	0.00	0.10	0.01	0.01	0.00	0.00	0.00	
27	0.00	0.00	0.08	0.01	0.00	0.05	0.27	0.00	0.00	0.05	0.00	
28	0.00	0.00	0.00	0.00	0.00	0.53	0.09	0.00	0.00	0.03	0.05	
29	0.00	0.00	0.00	0.06	---	0.00	0.00	0.00	1.01	0.00	0.00	
30	0.00	0.00	0.00	0.02	---	0.00	0.00	0.00	0.00	0.00	0.00	
31	0.00	---	0.00	0.00	---	0.00	---	---	0.00	0.00	---	
	total	2.17	0.47	2.18	0.15	0.31	1.98	1.35	0.23	3.04	0.08	1.05
	max	0.60	0.20	0.92	0.06	0.31	0.53	0.67	0.20	1.03	0.05	0.50
	min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

CODE:223

Keyname: Precipitation -Historical climate station, daily temperature and precipitation analyses.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (CLIM)

Menu options:TAPS

DESCRIPTION:

 CFS DATABASE routine to process historical CLIMATE station, daily temperature and precipitation values for field application. This routine develops the climate station format which is published in SCS Soil Survey manuscripts. Tables are developed for CLIMATE stations which are supported within the CFS DATABASE. The user may send output to a user named file which can be subsequently downloaded from the CFS, UTIL menu.

EXAMPLE: Station : BRYCE CANYON NP HDO, 1008
 ----- start yr. - 1959 end yr. - 1986

	Temperature						Precipitation				
Month	avg	avg	avg	max	min	grow'n	avg	less	more	days with	number of
January	36.0	8.6	22.3	54	-18	0	1.12	0.24	1.81	3	
February	39.0	11.4	25.2	55	-15	0	1.36	0.45	2.41	3	
March	43.9	16.3	30.1	62	-7	0	1.56	0.51	2.43	4	
April	52.4	22.7	37.5	69	4	2	0.91	0.20	1.46	2	
May	63.2	30.5	46.8	78	15	39	0.97	0.36	1.72	2	
June	74.0	38.6	56.3	88	20	206	0.59	0.16	1.10	1	
July	80.1	45.8	62.9	90	33	386	1.28	0.53	1.92	4	
August	77.0	44.2	60.6	88	30	293	2.20	0.75	3.40	5	
September	69.9	36.5	53.2	83	20	131	1.59	0.53	2.58	3	
October	59.1	26.9	43.0	75	7	14	1.18	0.26	2.06	2	
November	45.3	18.1	31.7	64	-4	0	1.18	0.38	1.83	2	
December	38.1	10.9	24.5	55	-12	0	1.16	0.28	1.94	2	
Yearly :											
Average	56.5	25.9	41.2	---	---	---	---	---	---	---	
Extreme	95	-26	---	91	-20	---	---	---	---	---	
Total	---	---	---	---	---	1070	15.10	9.25	18.65	33	

CODE:224

Keyname: Precipitation -Historical, NWS and SCS monthly precipitation gage data probability analyses.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (PREC)

Menu options:COLSUM

DESCRIPTION:

Probability analyses of period-of-record monthly precipitation for stations in the CFS Database for user specified months. Output can be sent to user named file for subsequent downloading from the CFS, UTIL menu. See CODE 225. This information can be particularly useful in conservation planning.

EXAMPLE:

Gage No. Station : 1956, COEUR D'ALENE R S							49	70	2.24	0.47	2.71	0.758	0.433
Ranks	WY	Apr	May	Total	Weibull	Value	50	71	1.99	2.11	4.10	0.773	0.613
#	#	inches	inches	inches	plotpos	log10	51	72	2.32	2.33	4.65	0.788	0.667
1	17	3.24	3.06	6.30	0.015	0.799	52	73	0.95	1.48	2.43	0.803	0.386
2	18	0.30	1.46	1.76	0.030	0.246	53	74	1.76	1.82	3.58	0.818	0.554
3	19	1.67	1.30	2.97	0.045	0.473	54	75	2.00	1.31	3.31	0.833	0.520
4	20	2.26	2.12	4.38	0.061	0.641	55	76	1.76	1.75	3.51	0.848	0.545
5	21	2.21	0.77	2.98	0.076	0.474	56	77	0.23	3.04	3.27	0.864	0.515
6	22	2.64	0.28	2.92	0.091	0.465	57	78	2.02	3.98	6.00	0.879	0.776
7	23	1.60	1.33	2.93	0.106	0.467	58	79	1.58	1.37	2.95	0.894	0.470
8	24	0.38	0.41	0.79	0.121	-0.102	59	80	1.64	4.75	6.39	0.909	0.806
9	25	1.22	2.45	3.67	0.136	0.565	60	81	2.79	2.41	5.20	0.924	0.716
10	31	1.71	0.64	2.35	0.167	0.371	61	82	3.53	3.53	7.06	0.939	0.849
11	32	2.88	4.55	7.43	0.182	0.871	62	83	0.74	1.32	2.06	0.955	0.314
12	33	0.70	1.43	2.13	0.197	0.328	63	84	2.30	3.15	5.45	0.970	0.736
13	34	1.20	0.91	2.11	0.212	0.324	64	85	0.79	2.26	3.05	0.985	0.484
14	35	1.18	0.50	1.68	0.227	0.225	65	86	1.61	1.99	3.60	1.000	0.556
15	36	0.49	0.82	1.31	0.242	0.117	number of values = 65						
16	37	4.41	0.41	4.82	0.258	0.683	arithmetic average = 3.69						
17	38	1.60	0.84	2.44	0.273	0.387	log average =						
18	39	0.71	1.17	1.88	0.288	0.274	std. deviation = 1.74						
19	40	2.74	0.92	3.66	0.303	0.563	coeff of variation = 0.47						
20	41	0.32	4.54	4.86	0.318	0.687	arithmetic skew = 1.037						
21	42	1.74	4.74	6.48	0.333	0.812	log std. dev. = 0.74						
22	43	2.30	1.06	3.36	0.348	0.526	log cof. var. = 0.47						
23	44	2.09	1.30	3.39	0.364	0.530	log skew = -0.63						
24	45	1.61	3.57	5.18	0.379	0.714	Exceed	Return	Normal	Log Normal	LP3		
25	46	1.88	1.52	3.40	0.394	0.531	% Prob	Period	Probability	Probability	Probability		
26	47	1.52	1.02	2.54	0.409	0.405	99.00	1.010	0.00	1.06			
27	48	3.42	6.16	9.58	0.424	0.981	95.00	1.053	0.82	1.48			
28	49	0.80	1.37	2.17	0.439	0.336	90.00	1.111	1.45	1.77			
29	50	1.06	1.04	2.10	0.455	0.322	80.00	1.250	2.22	2.19			
30	51	0.44	1.28	1.72	0.470	0.236	50.00	2.000	3.69	3.30			
31	52	0.88	0.88	1.76	0.485	0.246	20.00	5.000	5.15	4.97			
32	53	2.12	2.29	4.41	0.500	0.644	10.00	10.000	5.92	6.16			
33	54	1.20	1.36	2.56	0.515	0.408	5.00	20.000	6.55	7.35			
							1.00	100.000	7.74	10.24			

CODE:225

Keyname: Precipitation -Historical, National Weather Service,
precipitation gage, weighted probability analyses.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (PREC)

Menu options:INDEX

DESCRIPTION:

Probability analyses of National Weather Service, monthly precipitation gage data for one or multiple stations for their period-of-record. Sites are located in the western states. Very similar to COLSUM (CODE 224). User specifies data type, weight for station, earliest and latest water year for analysis, and span of months to be considered.

EXAMPLE:

Weight: 1.00 Station: 0304, ASHLAND,OR

Start Yr. 38 End Yr. 86

Year (Wt.)	April (1.00)	May (1.00)	INDEX TOTAL
---------------	-----------------	---------------	----------------

38	1.36	0.74	2.10
39	0.46	1.28	1.74
40	0.76	0.46	1.22
41	2.23	3.21	5.44
42	1.06	4.21	5.27
43	2.03	0.64	2.67
44	3.34	0.95	4.29
45	0.59	5.31	5.90
46	0.82	1.20	2.02
47	1.19	1.32	2.51
48	2.92	2.39	5.31
49	0.39	1.38	1.77
50	1.18	0.41	1.59
51	0.33	0.87	1.20
52	0.37	0.86	1.23
53	0.95	3.78	4.73
54	0.93	0.19	1.12
55	1.03	0.57	1.60
56	0.44	4.61	5.05
57	0.71	1.68	2.39
58	0.55	0.87	1.42
59	0.67	1.74	2.41
60	0.80	1.68	2.48
61	1.27	1.69	2.96
62	0.79	1.96	2.75
63	2.02	2.21	4.23
64	0.92	1.05	1.97
65	3.09	0.56	3.65
66	0.42	0.20	0.62
67	2.57	1.05	3.62
68	1.45	1.39	2.84

76 1.14 0.34 1.48

77 0.55 3.68 4.23

78 2.02 0.66 2.68

79 3.27 1.42 4.69

80 2.31 1.07 3.38

81 1.33 1.41 2.74

82 1.00 0.07 1.07

83 1.97 1.18 3.15

84 1.78 0.75 2.53

85 0.61 0.97 1.58

86 1.14 1.79 2.93

AVERAGE 2.79

MAXIMUM 5.90

MINIMUM 0.62

number of values = 49

arithmetic average = 2.79 log average = 0.395

std. deviation = 1.32 log std. dev. = 0.218

coeff of variation = 0.47 log cof. var. = 0.551

arithmetic skew = 0.655 log skew = -0.356

Exceed Z Prob	Return Period	Normal Probability	Log Normal Probability	LP3 Probability
------------------	------------------	-----------------------	---------------------------	--------------------

----- ----- ----- ----- -----

99.00 1.010 0.00 0.00 -----

95.00 1.053 0.62 1.09 1.04

90.00 1.111 1.10 1.31 1.29

80.00 1.250 1.68 1.63 1.6'

50.00 2.000 2.79 2.48 2.56

20.00 5.000 3.90 3.79 3.81

10.00 10.000 4.48 4.73 4.73

5.00 20.000 4.96 5.67 5.67

1.00 100.000 5.86 7.98 6.99

CODE:226

Keyname: Precipitation -(Graphics) -Historical, monthly,
National Weather Service precipitation data graphics
Source:CFS

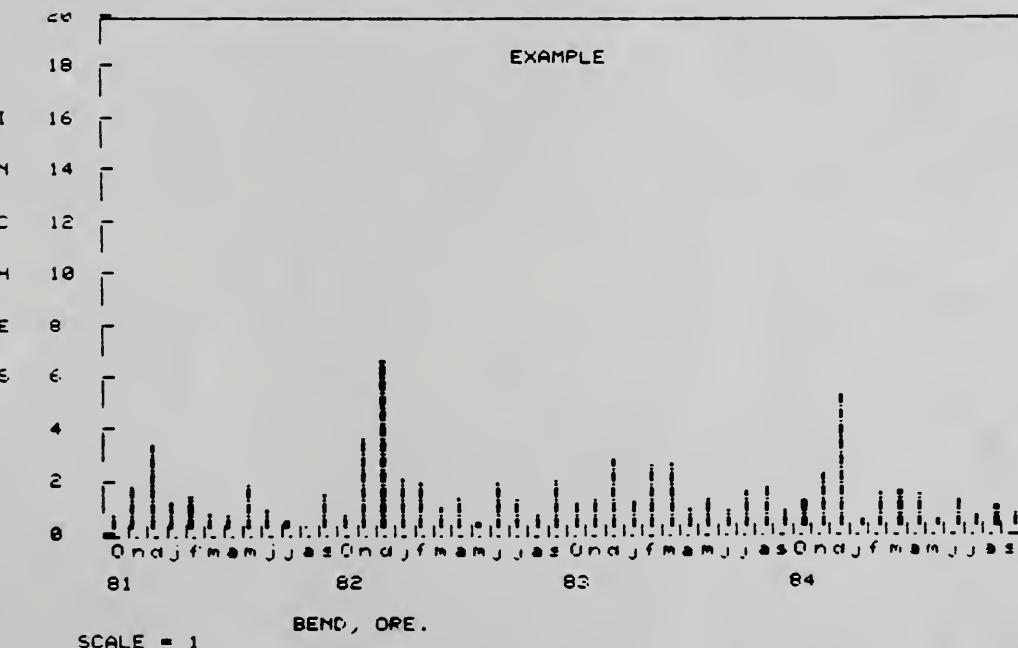
CFS menu path:CFS, DATABASE, GRAPHICS

Menu options:MONTHLY

DESCRIPTION:

Bar plot of historical (previous water years), monthly NWS precipitation data for user specified years (up to 4 years). Designed for TEKTRONIX 4000 series (and above) graphics terminals or computers with TEKTRONIX 4000 series emulator capabilities. User develops file from the CFS DATABASE using the TABLE command and then graphs data from the file under the GRAPHICS menu (MONTHLY option).

EXAMPLE:



CODE:227

Keyname: Precipitation -Graphics -Historical, NOAA, daily precipitation data graphics display

Source:CFS

CFS menu path:CFS, DATABASE, GRAPHICS

Menu options:COMP, DAILY, PARTIAL

DESCRIPTION:

CFS graphics routine plots DATABASE, historical, daily climate values (DATATYPE CLIM). Designed for TEKTRONIX 4000+ series graphics terminals or terminals with TEKTRONIX emulation packages. User develops file of precipitation data in the CFS DATABASE then uses the GRAPHICS menu to graph data from the file.

NOTE:

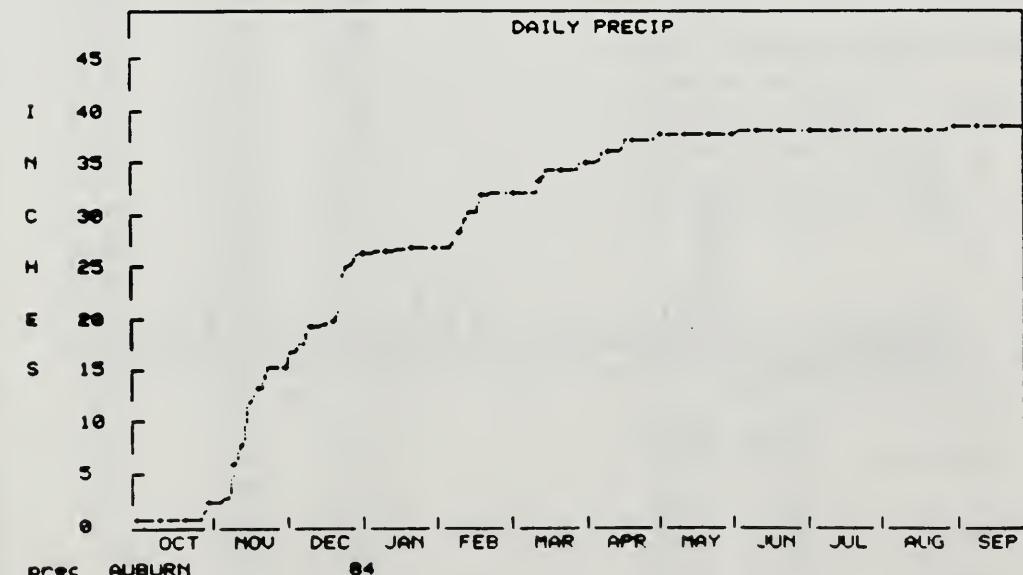
Three types of graphs:

COMP is a composite graph (bar and line graph) which requires two separate files of daily data.

DAILY is a line graph of accumulated daily data for user selected year(s).

PARTIAL provides a line graph of daily precipitation data for part of a historical water year.

EXAMPLE:



CODE:228

Keyname: Precipitation -Graphics- current water year and historical, daily (SNOWTEL and climate) precipitation.

Source:CFS

CFS menu path:CFS, DATABASE, GRAPHICS

Menu options:COMP, DAILY, PARTIAL

DESCRIPTION:

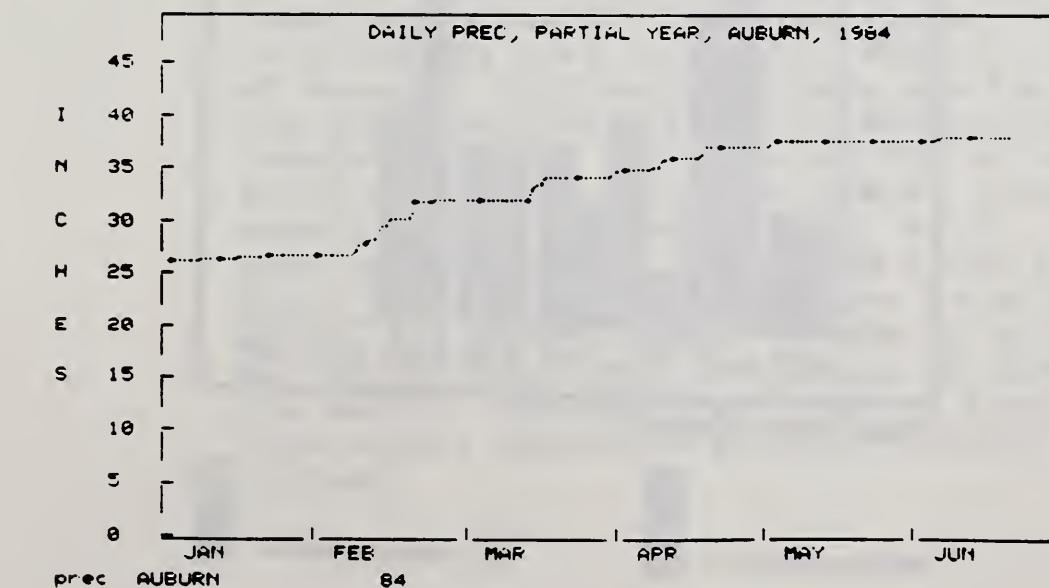
CFS graphics routines to plot historical and or current water year, daily SNOWTEL and climate station precipitation values against time. Designed for TEKTRONIX 4000 + series graphics terminals and terminals equipped with TEKTRONIX graphics emulation software. User may access current water year daily precipitation data from the WYSNO, WYSQ database or from the CFS historical DATABASE. Data from two sources can be graphed independently or concatenated and then graphed simultaneously. The user may save the graphics display to a file for subsequent redisplay.

NOTE:

Three graphs are available under the GRAPHICS menu:

See CODE 227.

EXAMPLE:



CODE:229

Keyname: Precipitation - Current water year, monthly, state basin precipitation graph - publication

Source: Snow Survey Program, State Water Supply Outlook Report

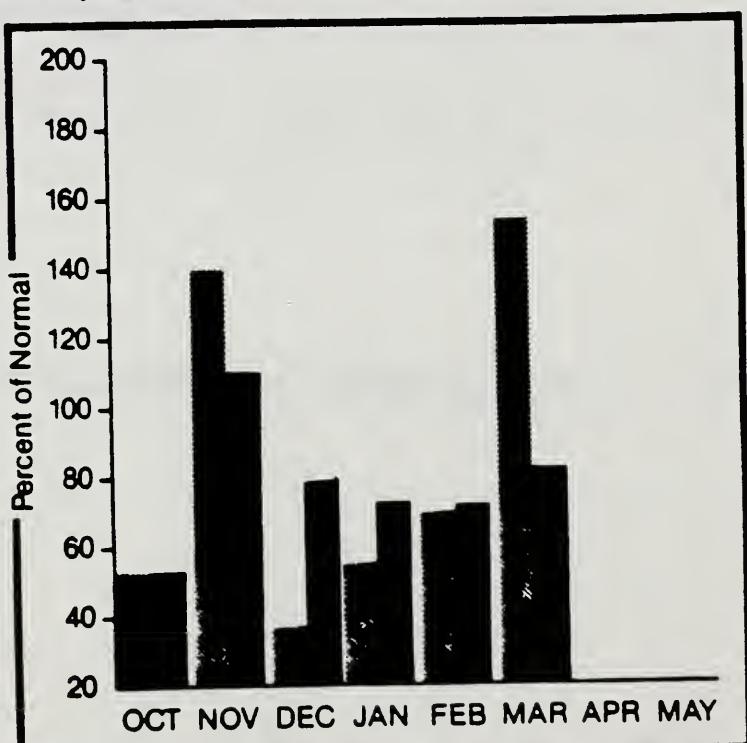
CFS menu path:
Menu options:

DESCRIPTION:

Bar graph of monthly and cumulative mountain precipitation within a basin based on selected stations. Published as part of each state's monthly Water Supply Outlook Report- January through June (most of the western states). The publication is typically mailed out to users by the 10th of each month. Contact the SCS state Snow Survey Program office to obtain a copy.

EXAMPLE:

Precipitation* (percent of normal)



*Based on selected stations

Monthly precipitation

Year to date precipitation

CODE:230

Keyname: Precipitation -General, current water year, state wide narrative description -publication.

Source: State Water Supply Outlook Report

CFS menu path:

Menu options:

DESCRIPTION:

Generalized, state-wide narrative description of current water year precipitation as it relates to the current water supply outlook within the state. Published as part of each state's monthly Water Supply Outlook Report (published January through June in most of the western states). The publications are mailed out by the 10th of each month. See CODE 231. Contact the SCS state Snow Survey Program office if you wish to be placed on the mailing list.

EXAMPLE:

PRECIPITATION:

During the first two weeks of March a warm moist southwesterly flow prevailed over the state. Almost all of March's precipitation fell during this period, with some valley stations reporting 24 hour totals in the one-half to one inch range. This pattern changed by midmonth to a dry and unusually cold northwesterly flow. With the change in airflow, the precipitation ended with only light and spotty amounts being reported during the last two weeks. The Panhandle received the most rain with Porthill reporting 200% of normal. Southeastern Idaho was the only part of the state reporting below normal precipitation, with Pocatello at 89% and Grace at 78% of normal. The state as a whole reported 125% of normal precipitation for the month of March. Temperatures were unusually high during the first two weeks of March with several record highs being set. By the end of the month, record lows were being recorded. On the average, the state ended up above normal for the month. The southeast had the highest departure from normal temperatures with Pocatello at plus 4 degrees.

CODE:231

Keyname: Precipitation -Current water year, narrative
description of state wide precipitation -computer accessed
Source:CFS

CFS menu.path:CFS, PRODUCTS, WSOR

Menu options:SLUGLINE

DESCRIPTION:

Generalized narrative statement of precipitation within a state as it relates to the current water year streamflow forecast. Accessible from CFS under the WSOR menu during the first week of the succeeding month (January through June in most of the western states). The same information is available in each state's monthly Water Supply Outlook Report publication which is mailed out during the first two weeks of the month (see CODE 230).

EXAMPLE:

PRECIPITATION

Unusually dry conditions persisted into January as precipitation amounts were generally well below normal. Northern Idaho, which was the only area near normal in December, dropped to 65% to 75% of normal in January. The central portion of the state showed a wide range from just 28% of average at Salmon to 74% at Grangeville. Southwest Idaho ranged from 40% to 65% of normal while southeast Idaho varied from 60% to as high as 91% at Pocatello. The Magic Valley was the one exception this month as Twin Falls received 132% of normal. All in all January was much better than December, but precipitation was still below normal over most of the state. Temperatures were near normal in the north and southwest while southcentral and southeast Idaho were some four to five degrees below normal.

CODE:232

Keyname: Precipitation -Map -monthly, general precipitation map of the western states -publication

Source: Water Supply Outlook for the Western United States - publication.

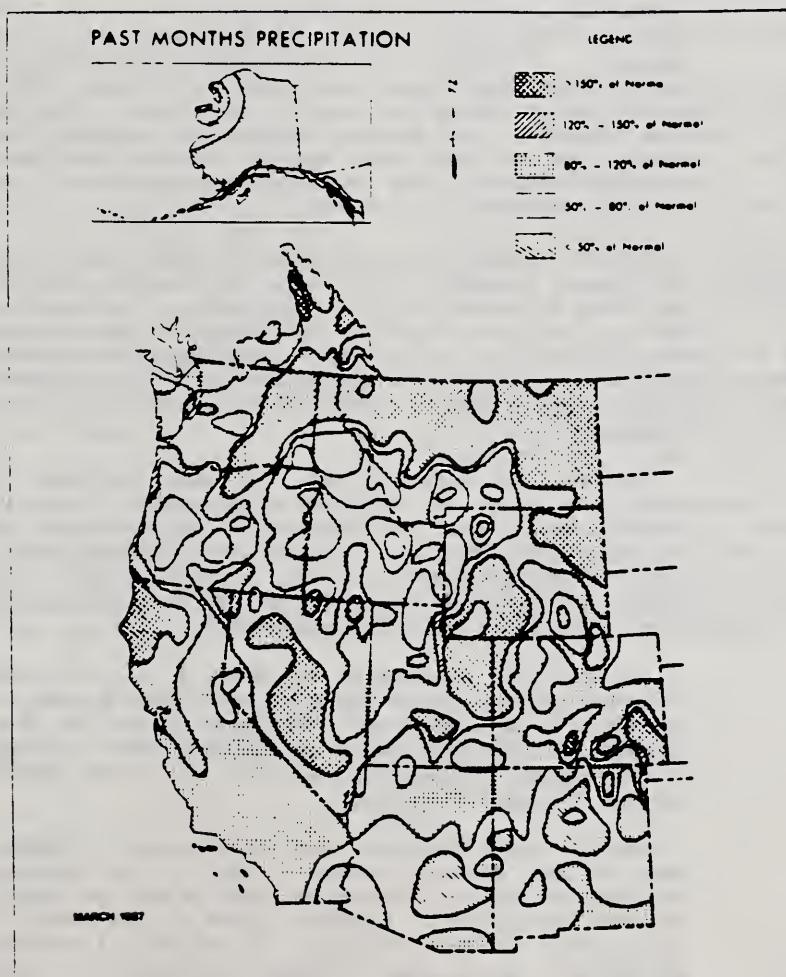
CFS menu path:

Menu options:

DESCRIPTION:

Map showing previous month's precipitation pattern as compared to normal in the western states. Published jointly by the Soil Conservation Service and National Weather Service, January through May of each year. Publication is mailed out during the second week of each month.

EXAMPLE:



CODE:233

Keyname: Precipitation -Narrative description of current water year precipitation within a major basin -publication
Source: Water Supply Outlook for the Western United States
CFS menu path:

Menu options:

DESCRIPTION:

General description of precipitation within a major basin in the western US. Published jointly by the Soil Conservation Service and National Weather Service, January through May of each water year.

EXAMPLE:

COLORADO BASIN

The water supply outlook for the Upper Colorado River Basin is for below average runoff during the spring snowmelt. Streamflow forecasts have declined 5 to 15 percent from those issued last month due to below normal precipitation throughout most of the basin. The San Juan, Gunnison, and Dolores Basins are forecast above normal, and the Green River Basin is forecast much below normal. Streams in the Lower Colorado River Basin are generally forecast above average.

Precipitation in February was much below average over the Upper Colorado River Basin with most stations reporting in the 50 to 80 percent range. Precipitation over the San Juan, Gunnison, and Dolores Basins averaged near 150 percent of normal. The Green River Basin experienced below normal precipitation in the headwater regions, but near to above normal amounts at lower elevations.

Seasonal precipitation over the Upper Colorado and Green River Basins is in the 50 to 80 percent range, but over the San Juan, Gunnison, and Dolores Basins it is closer to 150 percent. In the Lower Colorado Basin, seasonal precipitation is above average on the Salt, Tonto, and Little Colorado Basins and near normal over most of the remaining Arizona watersheds.

The mountain snowpack as of March 1 for the Upper Colorado and Green River Basins is much below average, in the 50 to 80 percent range. Snowpacks in the San Juan, Gunnison, and Dolores Basins are slightly above average. In the Arizona watersheds, snowpacks are above normal, between 120 and 140 percent.

Runoff during February was above normal throughout most of the Colorado Basin. Flow on the Colorado mainstem was 120 to 140 percent, and on the San Juan it was over 200 percent. Seasonal inflow to Lake Powell is now at 3.65 million acre-feet, 173 percent of average. Streamflows in the Lower Colorado continued much below normal 20 to 80 percent of average.

Reservoir storage remains high in the Upper Colorado River Basin. The combined storage in the ten major

CODE:234

Keyname: Precipitation -Narrative description of precipitation in the western US -publication

Source: Water Supply Outlook for the Western United States.

CFS menu path:

Menu options:

DESCRIPTION:

Generalized narrative description of current water year precipitation in the western US.

EXAMPLE:

General Outlook

Some localized shortages of available water supplies are expected in many areas of the West as a result of a dry weather pattern persisting for most of the winter. This situation is the second year in a row for Washington, northern Idaho, and Montana. Those water users whose only source of supply is from direct diversions are likely to be short of water earlier than normal as streams drop rapidly during low snowpack years. A line at about 38° north latitude marks the approximate demarcation between generally good prospects and generally poor prospects for spring runoff. South of this line, forecasts are for flows of 30 to 50 percent above normal. North of that line, forecasts worsen with projections in southern Idaho and Montana close to minimums of record. A few isolated pockets north of the 38° line in Oregon, Washington, and Wyoming are forecast to produce flows in the near normal range.

Precipitation during March was generally near to much above normal across the region. Precipitation in excess of 150 percent of normal was recorded in central Nevada, eastern Washington, northern Montana, central Wyoming and northeastern Utah. Conversely, southern Arizona and most of New Mexico experienced below to much below normal precipitation. The remainder of the West

generally fell between these two extremes. Despite the favorable precipitation in March, seasonal totals lag substantially behind the norm for in most of the West.

Snowpack conditions are poor in nearly all areas excepting the headwaters of the Arkansas, Rio Grande, Upper South Platte, and Dolores River basins in Colorado and the Salt, Verde, and Gila Rivers in Arizona. Mountain snowpacks on a diagonal line from southern California to northeastern Montana are less than 70 percent of normal. On both sides of this diagonal line, snowpacks are slightly better but still below average. Numerous snow course measurements in Montana and Idaho approached or were below previous minimums of record.

Although the West has had a dry winter and faces a low runoff season, the volume of water held in reservoirs will be ample in most instances to augment flows for irrigation and municipal usage. Reservoir levels are above average in all western states except Washington.

With careful planning and institution of water conservation measures, most water users will have sufficient supplies to make it through the coming spring and summer. Above normal precipitation in the next two months could significantly help, but no major reversal of the existing runoff forecasts should be anticipated.

CODE:235

Keyname: Precipitation -site location information
Source: CFS

CFS menu path: CFS, DATABASE, DBQ

Menu options: FLIST, FLISTBYNAME, FLISTBYID

DESCRIPTION:

CFS, DATABASE option which provides the user with precipitation site location information for sites requested through a query. Output is directed to a user named file which can be downloaded from the CFS, UTIL menu using the PRT option. FLISTBYNAME sorts the output alphabetically by sitename. FLISTBYID sorts the file by CFS I.D. Note that these commands are almost identical to the commands LIST, LISTBYNAME and LISTBYID except that in the case of the latter, output is directed to the user's terminal screen instead of to a file.

EXAMPLE:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	41	029	PREC	17100308	0304	4213	12243	4580	ASHLAND, OR
2	41	023	PREC	17070203	0356	4435	11830	4213	AUSTIN 3S, ORE
3	41	001	PREC	17050203	0412	4450	11749	3368	BAKER FAA AP, ORE.
4	41	001	PREC	17050203	0417	4446	11750	3444	BAKER KBKR, OR
5	41	065	PREC	17070306	0571	4507	12131	0310	BEAR SPRINGS RS (HOURLY)
6	41	017	PREC	17070101	0694	4404	12119	3650	BEND, ORE.
7	41	045	PREC	17050216	0723	4355	11810	3270	BEULAH ORE.
8	41	005	PREC	17080001	1028	4522	12201	0000	BRIGHTWOOD, ORE.
9	41	025	PREC	17120003	1124	4304	11852	4135	BUENA VISTA STN, OR
10	41	025	PREC	17120002	1176	4335	11857	4140	BURNS MSO AP, OR
11	41	029	PREC	17100307	1207	4232	12233	2500	BUTTE FALLS 1SE
12	41	043	PREC	17090006	1433	4424	12229	0860	CASCADIA, OR
13	41	035	PREC	18010201	1546	4314	12147	4760	CHEMULT, ORE.
14	41	067	PREC	17090010	1552	4525	12315	0780	CHERRY GROVE
15	41	035	PREC	18010202	1571	4239	12157	4155	CHILOQUIN 7NW, OR
16	41	029	PREC	17100309	1826	4202	12308	1900	COPPER (HOURLY)

CODE:236

Keyname:Precipitation -Historical Snotel data, format conversion.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (datatype snot)

Menu options:SNOSUM

DESCRIPTION:

CFS DATABASE conversion routine to modify format and units for historical SNOTEL data so that it can be compared to other data types. The "Prec Table Format" converts daily SNOTEL precipitation data into monthly values as in the NWS and SCS monthly precipitation tables. The "Clim Table Format" converts cumulative daily SNOTEL precipitation into daily precipitation. The other option under this format converts cumulative daily SNOTEL snow-water-equivalent into daily snow-water-equivalent.

EXAMPLE:

PREC SNOSUM OUTPUT

Station : 15H01S, BEAR CREEK

----- Unit = inches

yr	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	SUM
83	2.30	4.30	4.30	3.00	4.90	6.60	4.00	3.80	1.50	0.40	2.70	0.80	38.60
84	2.10	6.70			5.30	4.70	6.40	3.20	6.30	2.60	3.00	0.80	44.44
85	3.60	6.00	2.70	1.10	4.20	4.50	2.20	2.80	0.80	0.50	0.20	2.00	30.60
86	2.00	5.00	2.90	2.70	8.50	4.20	4.60	3.30	1.40	1.00	0.30	2.70	38.60
all													
years													
ave	2.50	5.50	3.30	2.27	5.73	5.00	4.30	3.28	2.50	1.13	1.55	1.58	35.93
yrs	(4)	(4)	(3)	(3)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)
1961-1985 average :													
	2.67	5.67	3.50	2.05	4.80	5.27	4.20	3.27	2.87	1.17	1.97	1.20	34.60
yrs	(3)	(3)	(2)	(2)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(2)

IV-78

CODE:300

Keyname: Streamflow -observed, current water year, by state
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, DATA, STRM
Menu options:LI

DESCRIPTION:

Current water year, observed, streamflow volume by state (USA option) or by multi-state basin (COMB).

NOTE: Most observed streamflow data comes from USGS and is not available for up to one or two years after actual measurement. Some selected streamgage sites are equipped with telemetry equipment and data for those stations may appear in the WYFOR program. Observed historical streamflow data (previous water years) is accessed under the CFS database (ODB).

Use the WYFOR USA option to obtain a list of streamgage stations used by the Snow Survey Program in the state. The LI- option provides 25 year average streamflow data for selected stations. The COMB option provides multi-state basin, observed streamflow data for the current water year (as available).

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 7:54:58

STREAMFLOW DATA

JANUARY 1987

MONTHLY VALUES

IDENT	STATION	JAN	FEB	MAR	APR	MAY	JUN
419000	SPOKANE AT POST FALLS						
414500	ST. JOE AT CALDER						
037500	SNAKE AT HEISE						
046023	HENRYS FORK MR ASHTON			93.3			
052200	TETON AB S LEIGH CK						
055000	TETON MR ST. ANTHONY						
056500	HENRYS FORK MR REXBURG						
069500	SNAKE MR BLACKFOOT						
073000	PORTNEUF AT TOPAZ						
083500	OAKLEY RES INFLOW						
105000	SALMON FALLS CK MR SAM J						
118700	LITTLE LOST BL MFT						

CODE:301

Keyname: Streamflow, observed 25 year average

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR DATA (STRM)

Menu options:LI-

DESCRIPTION:

(see note in CODE 300) -observed average streamflow data for SCS standard period.

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 7:56:30

STREAMFLOW DATA

FEBRUARY 1987

MONTHLY AVERAGES

IDENT	STATION	FEB	MAR	APR	MAY	JUN	JUL
419000	SPOKANE AT POST FALLS	435.53	551.64	863.66	1122.1	590.60	146.56
414500	ST. JOE AT CALDER	98.64	131.29	272.90	512.9	330.2	94.71
037500	SNAKE AT HEISE	178.82	190.30	351.72	1067.4	1377.4	727.88
046023	HENRYS FORK MR ASHTON	72.40	80.27	107.69	200.02	148.34	100.6
052200	TETON AB S LEIGH CK						
055000	TETON MR ST. ANTHONY	24.23	29.64	45.41	104.61	143.96	93.23
056500	HENRYS FORK MR REXBURG	138.04	148.16	205.78	420.18	408.58	225.88
069500	SNAKE MR BLACKFOOT	252.80	253.76	437.09	1390.6	1770.2	991.13
073000	PORTNEUF AT TOPAZ	10.67	13.28	17.60	25.70	18.76	12.83
083500	OAKLEY RES INFLOW	3.89	5.24	7.65	12.99	6.80	2.28
105000	SALMON FALLS CK MR SAM J	6.30	11.32	23.24	34.85	21.83	5.60
118700	LITTLE LOST BL MFT						
119000	LITTLE LOST MR HOWE	2.22	3.59	5.10	9.14	11.15	

CODE:302

Keyname:Streamflow, observed, current water year by state basin
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, DATA (STRM)
Menu options:LO

DESCRIPTION:

(see note in code 300) Tabular report showing current and previous water year streamflow data used in streamflow forecasting for month selected by user.

EXAMPLE:

STREAMFLOW DATA

JANUARY 1987

STREAM GAGING STATION	THIS YEAR	LAST YEAR	61-85 AVERAGE
SPOKANE AT POST FALLS	55.3	45.6	48.0
ELWHA NR PORT ANGELES	86.4	90.6	93.0
SNAKE AT MEISE	92.6	83.2	84.0
HENRYS FORK NR ASHTON	93.3	76.5	82.0
TETON NR ST. ANTHONY	65.4	65.0	63.2
SNAKE NR BLACKFOOT	56.3	45.2	47.0
OAKLEY RES INFLOW	0.7	1.2	0.6
LITTLE LOST BL MFT	46.3	34.3	45.0
BIG LOST AT HOWELL	89.5	76.3	76.0

***** EXAMPLE DATA ONLY! *****

Keyname:Streamflow forecast coordination and review routine
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR (FCOR)
Menu options:(COMB, USA, CANA)

DESCRIPTION:

Current water year streamflow forecast review display by state or multi-state basin. This routine is used by hydrologists who are involved in reviewing and coordinating streamflow forecast values before official release. Refer to the CFS, WSOR or to the published State Water Supply Outlook Report for officially released streamflow forecasts.

EXAMPLE:

COLUMBIA RIVER at Birchbank 2	APR-JUL VOLUME
ID = WA3102 FORECAST = 28400.00 (84.0%)	AVERAGE = 35440.00
RMX = 32500.00 (94.0%)	
RMN = 20000.00 (70.0%)	

Keyname:Coordinated Streamflow Forecast -current water year
 Source:CFS (also published in State Water Supply Outlook Report).
 CFS menu path:CFS, PRODUCTS, WSOR
 Menu options:REP, REP80, BULL, BULL80

DESCRIPTION:

 Tabular report by state, basin showing streamflow forecast information for standard forecast points. This same report is published in the monthly State Water Supply Outlook Reports for each of the western states (usually January through June). The CFS based version allows the user to review all preceeding month reports during the current water year and is available approximately two to three weeks before published version.

EXAMPLE:

STREAMFLOW FORECASTS

FORECAST	FCST	2SYR	1MOST	MOST	RMX	RMX:RNN	RNN
	Avg	(Prob)	Prob:		Z :	Z	
	Period	KAF	1KAF	ZAVG	KAF	AVG:KAF	Avg
WIND RIVER near Dubois	APR-SEP	103	101	98.	126	122 76	74.
WIND RIVER at Riverton 2	APR-SEP	678	685	101	861	127 509	75.
WIND RIVER below Boysen 2	APR-SEP	832	845	102	1045	126 645	78.
BULL LAKE CREEK near Lenore 2	APR-SEP	183	194	106	234	128 154	84.
LITTLE POPO AGIE RIVER near Lander	APR-SEP	53	53	100	68	128 38	72.

 1 - Reas. max. and reas. min. forecasts are for 5% and 95% exceedance levels and also (2) below.

2 - Corrected for upstream diversions or changes in reservoir storage.
 The average is computed for the 1961-85 base period.

Keyname:Streamflow Forecast Narrative by state
Source:CFS (also available in State Water Supply Outlook Report publication).
CFS menu path:CFS, PRODUCTS, WSOR, REP, REP80
Menu options:SLUGLINE

DESCRIPTION:

General narrative summary of statewide streamflow conditions, available by state, monthly, January through June (usually after the first week of the succeeding month). This same narrative is published in the State Water Supply Outlook Report.

EXAMPLE:

STREAMFLOW

Expected streamflow for the spring and summer months for much of the state are forecast to be below average. Several drainages are predicted to have runoff greater than 30% below average. These are the upper portion of the Snake River drainage and also includes the Salt and Greys Rivers drainage; the lower tributaries to the Green River, including Haas Fork and La Barge Creek; the Bear River; the Little Snake River, and the Upper North Platte River above Seminoe Reservoir. Portions of the state where water users can expect near normal streamflows include the Wind River Basin; the Greybull River; Rock Creek, Piney Creek, and Middle Fork of the Powder River along the east face of the Big Horn Mountains; and Blacks Fork and Henrys Fork in southwest Wyoming. The remainder of the state can expect streamflows to be 10 to 30 percent below average. The forecasts in this bulletin are the result of coordinated activity between the Soil Conservation Service and the National Weather Service, in an effort to provide the best possible service to water users.

Keyname:Water supply outlook narrative by state basin.
Source:CFS (also available in State Water Supply Outlook Report publication).
CFS menu path:CFS, PRODUCTS, WSOR, (REP), (REP80), (BULL), (BULL80)
Menu options:(user selected basin)

DESCRIPTION:

General narrative concerning water supply outlook by basin within selected state. This same narrative report is available in the published State Water Supply Outlook Report. Information is available monthly, January through June, after the first week of the month.

EXAMPLE:

SNAKE RIVER BASIN CURRENT AS OF 3/ 6/87 15:18:11

SNAKE RIVER BASIN

Water users in much of this basin can expect streamflows to be much below average. Flows are predicted to range from only 55% of normal for the Salt River at Etna to 80% of normal for Pacific Creek at Moran. Snowpack buildup has not brightened the picture any. Most mountain snow accumulation is much below average. Compared to long-term averages, the best snowpack is in the Gros Ventre drainage and it is only 83% of normal. Other drainages vary from 57% to 76% of average. Reservoir storage, with the exception of Jackson Lake, is above average.

Keyname: Streamflow Prospects Map -(state)

Source: State Water Supply Outlook Report -publication

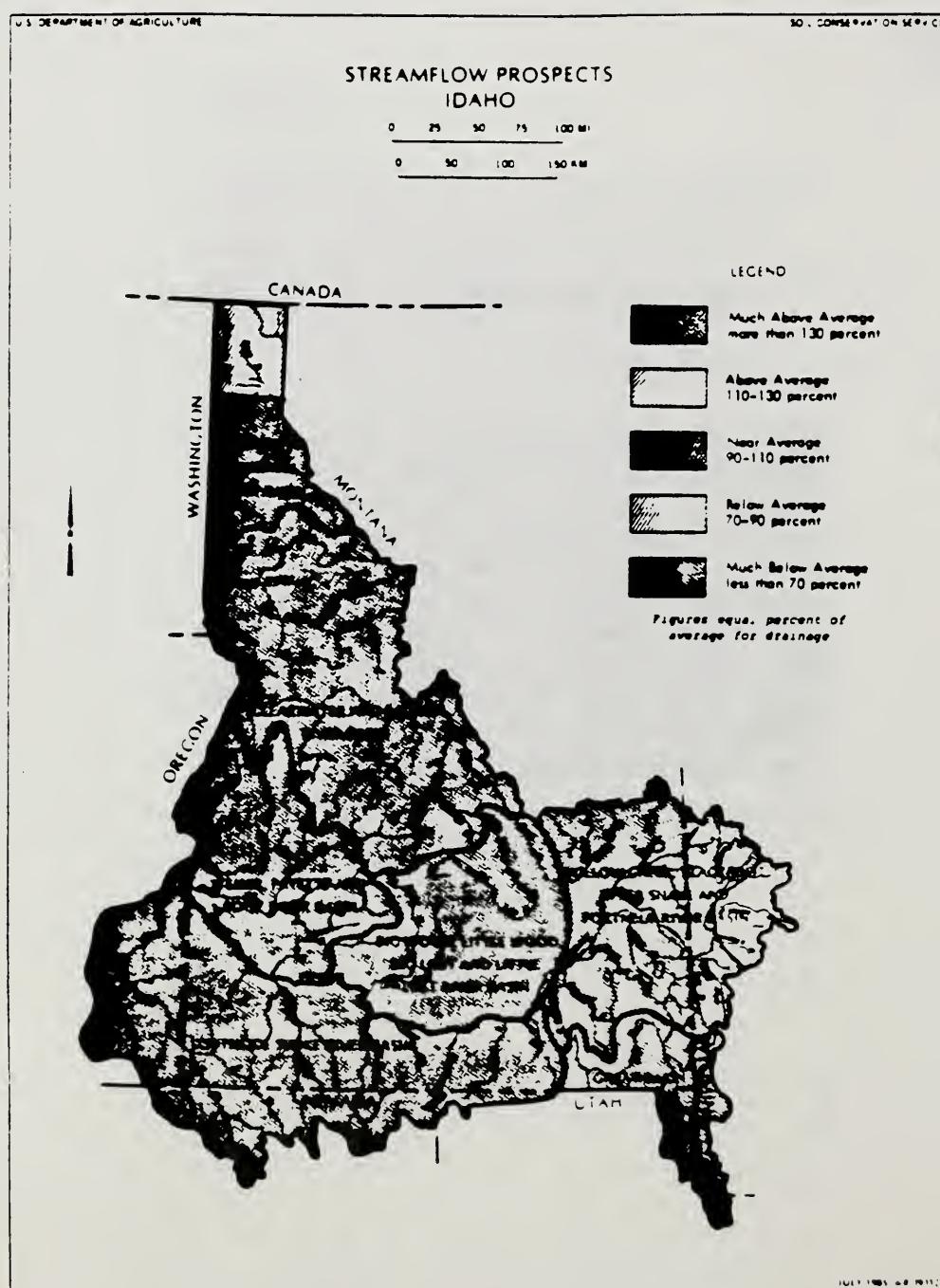
CFS menu path:

Menu options:

DESCRIPTION:

State streamflow prospects map -published monthly, January through June as part of the State Water Supply Outlook Report. Publication is mailed out by the 10th of each month.

EXAMPLE:



Keyname:Western states, USGS, historical streamflow -database
 Source:CFS
 CFS menu path:CFS, DATABASE, DBQ (STRM)
 Menu options:TABLE, CARDS, PRELUDE

DESCRIPTION:

 Historical database of streamflow for streamgages in the western states. Most of the data is monthly (by water year), however, some daily data is available (see the FLIP program for stations by state and county). User needs to be familiar with CFS database query system.

NOTE:

 TABLE format shows station id and name, and monthly streamflow values for each water year. Routine also calculates and displays monthly averages for all years and the monthly average for the current 25 year period. The CARD format shows the monthly data only and in a machine readable format.

EXAMPLE: (edited to fit page!)

/cfs/cfs/data/stre30

Station : 06016000, BEAVERHEAD R MR BARRATTS

----- Unit = acre-ft

Scale = 100

year	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
7												200
8	242	262	220	190	159	212	379	495	1350	532	326	300
9	439	374	331	256	213	274	420	537	548	247	220	261
10	338	346	293	272	218	574	684	658	181	124	135	159
11	232	269	222	154	111	184	222	271	475	107	138	133
12	275	303	215	184	144	151	327	719	976	202	371	261
13	408	508	307	184	139	207	863	892	916	344	536	263
14	406	380	199	160	120	173	458	603	520	241	124	168
15	373	386	176	141	128	164	484	565	499	293	256	352
16	275	246	211	205	170	314	408	713	690	383	191	196
17	441	304	223	202	159	171	450	1170	1090	272	185	170
18	256	375	301	264	204	266	303	380	230	241	189	173
19	323	281	224	165	156	189	292	221	159	84	73	73
20	99	165	187	154	135	135	200	477	349	152	174	121
21	181	229	175	163	150	298	507	621	833	215	230	209
22	202	309	266	243	170	197	345	898	643	208	220	193
23	173	228	231	202	172	173	265	543	547	290	261	174
24	204	242	202	197	178	188	337	317	133	139	99	99
25	133	174	166	157	153	224	515	389	660	325	236	218
26	369	342	283	202	181	286	436	167	158	150	99	113
27	115	158	201	178	144	191	187	267	590	170	198	187
28	260	290	280	237	207	344	230	388	197	167	129	108
29	135	206	186	172	153	191	261	430	267	184	130	115
30	159	267	237	185	166	205	281	185	184	133	116	120
31	151	202	189	114	135	162	200	121	148	103	84	83
32	103	104	86	74	86	117	111	98	286	162	93	70
33	117	163	124	121	98	135	145	261	226	81	68	71

68	241	309	239	211	216	274	386	515	515	105	151	41	11
69	333	350	258	222	191	367	946	841	425	341	41	55	221
70	290	330	244	220	202	227	283	857	763	303	94	339	
71	320	331	275	231	241	290	572	1116	1014	419	55	245	
72	428	391	320	266	242	570	522	507	773	279	134	203	
73	394	389	261	239	210	264	558	481	560	433	E 21	130	
74	292	330	279	209	196	337	544	325	269	194	2	130	
75	254	295	254	194	165	206	240	948	1160	708	340	242	
76	314	334	339	250	206	283	339	896	807	456	383	372	
77	400	378	272	227	214	247	373	158	88	112	40	169	
78	264	269	244	217	197	306	599	477	264	263	57	228	
79	300	286	242	168	170	264	540	590	109	16	9	159	
80	216	243	229	196	182	215	416	697	649	292	72	300	
81	378	337	299	262	238	280	498	624	457	67	E 29	77	
82	318	330	288	215	202	280	537	795	580	436	176	263	
83	396	375	310	264	226	313	494	637	543	573	333	262	
84	507	517	370	331	283	364	694	1363	1603	724	602	442	
85	543	473	363	314	247	234	702	409	180	E 100	100	117	
all													
years													
ave													
years (78)													
1961-1985 average :													
308 323 266 218 200 272 488 572 583 294 125 200													
years (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25)													

Note : Units are in acre feet

Keyname: Streamflow forecast point location information by state, county, and SCS field office
Source:CFS
CFS menu path:CFS, DATABASE, FLIP
Menu options:

DESCRIPTION:

CFS program displays site location information by state, county, and SCS Field Office. This program serves as a preprocessor to the CFS database query system (DBQ) and provides a method for locating sites according to political as well as physiographic boundaries.

NOTE:

FLIP provides a method for the SCS Field Office and other users to obtain a list of site location information in a given county (the level of jurisdiction at which most SCS Field Offices operate). The following site information is provided:

EXAMPLE:

1. CFS DATABASE Sitename = LITTLE POPO AGIE R NR LANDER
2. Local SCS Field Office location(s).....
.....Lander / Riverton / Dubois
3. County name (or other design.).....Freemont
4. State FIPS code.....56
5. County FIPS code number013
6. CFS Data Type.....DAILY STREAM GAGE
7. USGS - Hydrologic Unit Code number (HUC).....10080001
8. CFS Site Identification Number (I.D).....06233000
9. Latitude (degrees and minutes).....42,43
10. Longitude (degrees and minutes).....108,39
11. Elevation (feet).....
12. SHEF CODE (Standard Hydrologic Exchange Format)....??W4
13. Section27
14. Township32N
15. Range99W

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

Keyname:Historical, observed streamflow data analysis

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (STRM)

Menu options:COLSUM

DESCRIPTION:

 CFS, operational database (ODB) routine which analyzes observed, monthly streamflow data for stream gages (one at a time) in the western states (USGS data). The primary purpose is to conduct probability analyses of the data and to rank streamflow in ascending, descending, or chronological order according to user needs. Values are unweighted (see INDEX).

EXAMPLE: (edited to fit page!)

 Gage No. Station : 07091500,ARKANSAS RIVER AT SALIDA

Ranks BY	Apr	May	Total	Weibull	Value
#	acre-ft	acre-ft	acre-ft	plotno	log10
1	58	18900	112900	131800	0.034 5.120
2	59	12900	29900	42800	0.069 4.631
3	60	23100	48400	71500	0.103 4.854
4	61	13300	47100	60600	0.138 4.782
5	62	35000	80600	115600	0.172 5.043
6	63	20400	55000	75400	0.207 4.877
7	64	12600	49200	61800	0.241 4.791
8	65	18700	52600	71300	0.276 4.853
9	66	18000	66800	84800	0.310 4.928
10	67	14600	43800	58400	0.345 4.746
11	68	6800	28900	35700	0.379 4.553
12	69	14500	73500	88000	0.414 4.944
13	70	11800	102500	114300	0.448 5.058
14	71	16100	37000	53100	0.483 4.725
15	72	10800	44600	55400	0.517 4.744
16	73	11900	42400	54300	0.552 4.733
17	74	8800	68900	77700	0.586 4.890
18	75	19000	28600	47600	0.621 4.678
19	76	9300	40500	49800	0.655 4.697
20	77	6700	17000	23700	0.690 4.375
21	78	4900	22500	27400	0.724 4.438
22	79	7400	48200	55600	0.759 4.745
23	80	12100	44100	56200	0.793 4.750
24	81	8900	13000	21900	0.828 4.340
25	82	5000	30500	35300	0.862 4.550
26	83	1300	12100	13400	0.897 4.127
27	84	12600	87600	100200	0.931 5.001
28	85	19900	34800	54700	0.966 4.738

Number of values = 28

arithmetic average = 62089 log average = 4.741

std. deviation = 29069 log std. dev. = 0.229

coeff of variation = 0.47 log cof. var. = 0.048

arithmetic skew = 0.643 log skew = -0.756

Exceed	Return	Normal	Log Normal	LPS
# Prob	Period	Probability	Probability	Probability
99.00	1.010	0	16161	12185
95.00	1.053	14270	23143	29991
90.00	1.111	24822	26029	27258
80.00	1.250	37613	35350	36442
50.00	2.000	62089	55113	58846
20.00	5.000	84546	85925	84385
10.00	10.000	99356	108369	102342

Keyname:Historical, streamflow analysis routine
 Source:CFS
 CFS menu path:CFS, DATABASE, DBQ
 Menu options:INDEX

DESCRIPTION:

 CFS, database probability analysis routine used to analyze historical streamflow data in the CFS historical database (ODB) for a user specified forecast period during water years. This analysis routine is similar to COLSUM (code 310). It allows the user to analyze more than one station at a time, to weight inputs, and to determine period of analysis.

EXAMPLE: (edited to fit page!)

Weight: 1.00 Station: 09050700, BLUE RIVER INFLOW TO BILLION RESERVOIR

Start Yr.	70	End Yr.	85
Year	April	May	INDEX
(Wt.)	(1.00)	(1.00)	TOTAL
70	5200	68400	73600
71	12800	35000	47800
72	8600	33600	42200
73	4200	30800	35000
74	6700	56700	63400
75	4900	24200	29100
76	6600	32200	38000
77	8000	27300	35300
78	8600	31700	40300
79	7000	36500	43500
80	6100	33700	39800
81	7200	15900	23100
82	6300	27900	34200
83	6200	23500	29700
84	7700	66400	74100
85	12900	48500	61400
	AVERAGE	44456	
	MAXIMUM	74100	
	MINIMUM	23100	

 number of values = 16
 arithmetic average = 44456 log average = 4.624
 std. deviation = 13600 log std. dev. = 0.146
 coeff of variation = 0.33 log cof. var. = 0.032
 arithmetic skew = 0.860 log skew = 0.295

Exceed	Return	Normal	Log Normal	LPI
% Prob	Period	Probability	Probability	Probability
99.00	1.010	8171	19257	20726
95.00	1.053	18793	24215	24944
90.00	1.111	24457	27359	27695
80.00	1.250	31321	31724	31610
50.00	2.000	44456	42111	41421
20.00	5.000	57591	55897	55363
10.00	10.000	64453	64816	65407
5.00	20.000	70118	73234	75217
1.00	100.000	80741	92088	99900

Keyname: Water supply outlook -western states -publication
Source: Water Supply Outlook for the Western United States
CFS menu path:
Menu options:

DESCRIPTION:

General narrative describing water supply outlook for major basins in the western US, -jointly published by National Weather Service, and Soil Conservation Service. Published monthly, January through May, each water year. Publication is sometimes referred to as the "Westwide Report".

EXAMPLE:

General Outlook

On the upbeat side of a year in which seasonal runoff in the West appears to be dismally low, there are some above normal flows expected from the mountainous areas of southern Colorado, northern New Mexico, and central Arizona. Above normal spring and summer runoff is expected from the Arkansas, Upper Rio Grande, and San Juan Basins. Watersheds in central Arizona are also expected to produce above average flows. Much above normal flows are expected for the Rio Grande mainstem in New Mexico. Below normal flows are expected nearly everywhere else, with much below normal flows expected for California, Nevada, Idaho, northern Utah, and most of Montana.

A large portion of the West received below normal precipitation during the month of February. Slightly below normal precipitation was observed over most of Washington, northern Idaho, western Montana, and the extreme northern and southern regions of California. Much below normal precipitation fell over the Canadian portion of the Columbia Basin, the Continental Divide areas of Montana, and also the eastern half of Montana. Near normal amounts fell over most of Oregon, Nevada,

central Utah, southern Idaho, and central California. Much above normal February precipitation was recorded over eastern Wyoming, all but the Rocky Mountain Divide portion of Colorado, most of New Mexico, the southern two-thirds of Arizona, and extreme western Utah. Alaska received generally below normal precipitation during February.

Snow accumulation conditions are below normal nearly everywhere in the western mountains. In fact, a large portion of the Western U.S., including Montana, Idaho, Nevada and California, is much, much below normal. Several snowcourses in these areas have registered new record low water contents for this time of year. Snowpacks in the Gunnison, Dolores, Lower San Juan, and Upper Willamette Basins are near normal. Above normal snowpacks have been measured in the Arkansas, Rio Grande, Upper San Juan, and central Arizona Basins.

Most reservoirs in the West are expected to store enough water this year to satisfy the downstream water users. However, there will be shortages in some areas of Montana, Oregon, southwestern Utah, and the Yakima Basin of central Washington. Smaller power reservoirs in the Columbia Basin continue to suffer from last year's low flows.

Keyname: Streamflow forecasts for western United States
 Source: Water Supply Outlook for the Western United States
 CFS menu path:
 Menu options:

DESCRIPTION:

 Western state's streamflow forecasts by major basin. Published as part of the Water Supply Outlook for the Western United States. Published jointly by National Weather Service and Soil Conservation Service, monthly, January through May.

EXAMPLE:

STREAMFLOW FORECASTS

STREAM AND STATION	FORECAST PERIOD	FORECASTS THIS YEAR				35 YEAR '95-'95 AVERAGE RUNOFF 1'000 AF
		MOST PROBABLE 1'000 AF PERCENT OF AVG	REASONABLE MAX PERCENT OF AVG.	REASONABLE MIN PERCENT OF AVG.		
SASKATCHEWAN BASIN						
ST. MARY RIVER BABBB NR, MT	APR-SEP	389	82	98	66	474
MISSOURI BASIN						
RED ROCK RIVER MONIDA NR, MT	APR-SEP	70	61	96	27	11
BEAVERHEAD RIVER GRANT, MT	APR-SEP	100	57	91	24	174
BARRETTS, MT	APR-SEP	129	58	92	24	224
BIG HOLE RIVER MELROSE NR, MT	APR-SEP	495	65	95	35	757
RUBY RIVER ALDER NR, MT	APR-SEP	83.0	78	110	46	106
MADISON RIVER GRAYLING NR, MT	APR-SEP	425	85	103	67	499
MCALLISTER NR, MT	APR-SEP	680	79	97	61	856
GALLATIN RIVER GALLATIN GATEWAY NR, MT	APR-SEP	360	67	85	49	540
LOGAN, MT	APR-SEP	338	55	81	29	616
MISSOURI RIVER TOSTON, MT	APR-SEP	1670	64	151	20	2590
FORT BENTON, MT	APR-SEP	2405	60	153	31	3990
VIRGELLE, MT	APR-SEP	2795	62	155	36	4500
LANDUSKY NR, MT	APR-SEP	3070	63	160	36	4900
PORT PECK DAM BLO, MT	APR-SEP	2920	61	164	33	4800
LAKE SAKAKAWEA INFLOW, ND	APR-SEP	8670	71	136	44	12150
LITTLE MISSOURI RIVER WATFORD CITY NR, ND	PEB-SEP	401	95	139	59	421

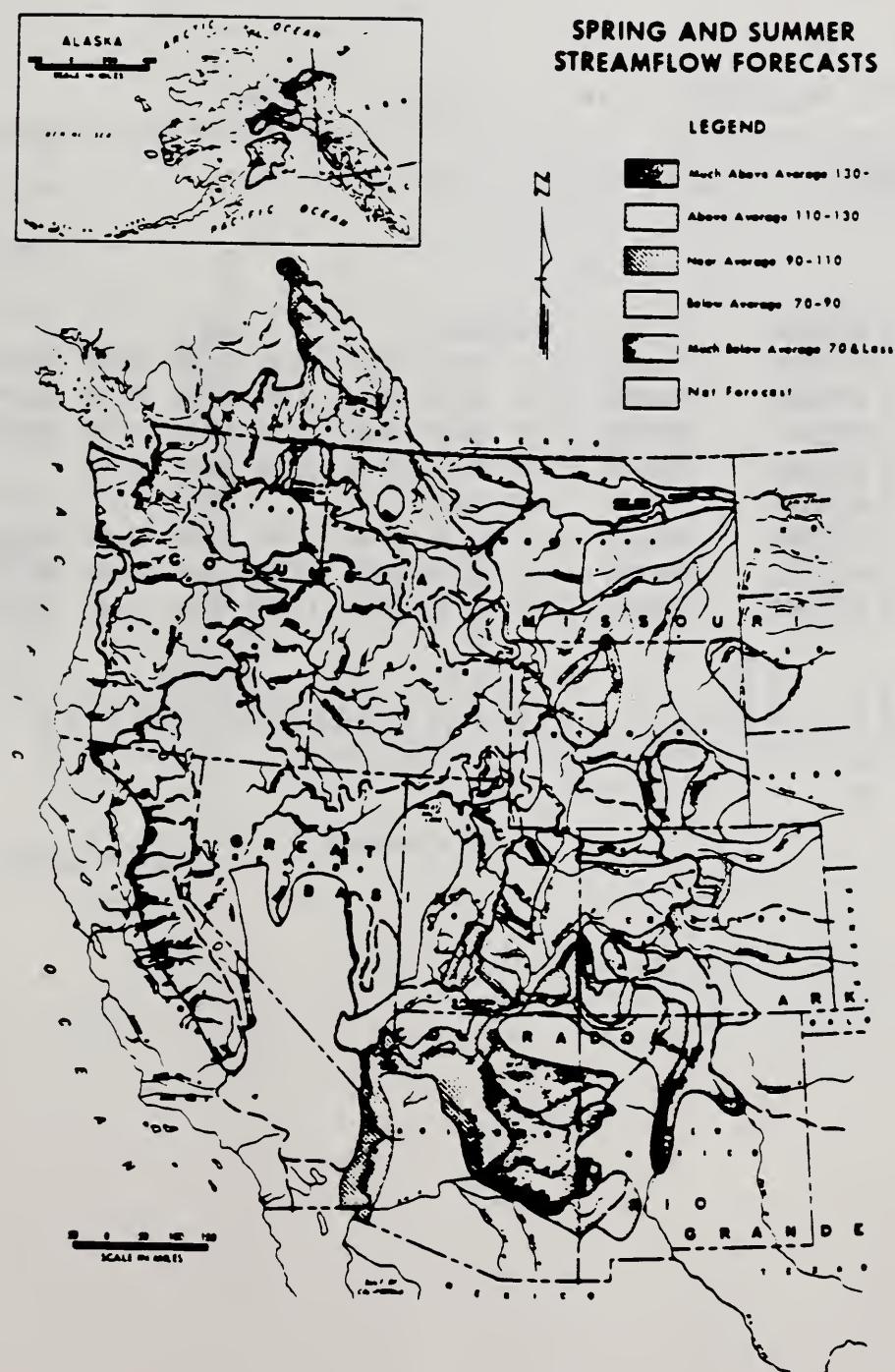
CODE:314

Keyname: Streamflow forecast map for western United States
Source: Water Supply Outlook for the Western United States
CFS menu path:
Menu options:

DESCRIPTION:

Spring and Summer streamflow forecast map for the western United States, published jointly by National Weather Service and the Soil Conservation Service, January through May.

EXAMPLE:



CODE:315

Keyname: Streamflow historical database and retrieval system -USGS
Source: USGS, National Water Data Storage and Retrieval System
(WATSTORE)
CFS menu path: (not available on CFS)
Menu options:

DESCRIPTION:

Primary source of surface and groundwater quantitative and qualitative data. Data can be accessed from approximately 50 USGS District Offices throughout the US. Requires authorization by Chief Hydrologist, USGS National Center, Mail Stop 409, Reston, Virginia, 22092. SCS users will probably access WATSTORE through the state office. There is a charge for access and use of the system.

NOTE:

Refer to WATSTORE User's Guide, Volume 1.

EXAMPLE:

2 09223000	0006000003	ENT							
3 09223000	19600901	17.00	19.00	18.00	18.00	17.00	16.00	15.00	14.00
3 09223000	19600902	14.00	14.00	14.00	14.00	14.00	14.00	15.00	14.00
3 09223000	19600903	16.00	18.00	15.00	14.00	14.00	22.00	25.00	16.00
3 09223000	19600904	13.00	12.00	12.00	12.00	13.00	13.00		
2 09223000	0006000003	ENT							
3 09223000	19601001	13.00	13.00	13.00	14.00	15.00	15.00	16.00	24.00
3 09223000	19601002	31.00	33.00	26.00	24.00	24.00	20.00	18.00	18.00
3 09223000	19601003	17.00	17.00	17.00	17.00	16.00	16.00	16.00	16.00

CODE:316

Keyname:Streamflow -graphics, historical (observed USGS)

Source:CFS

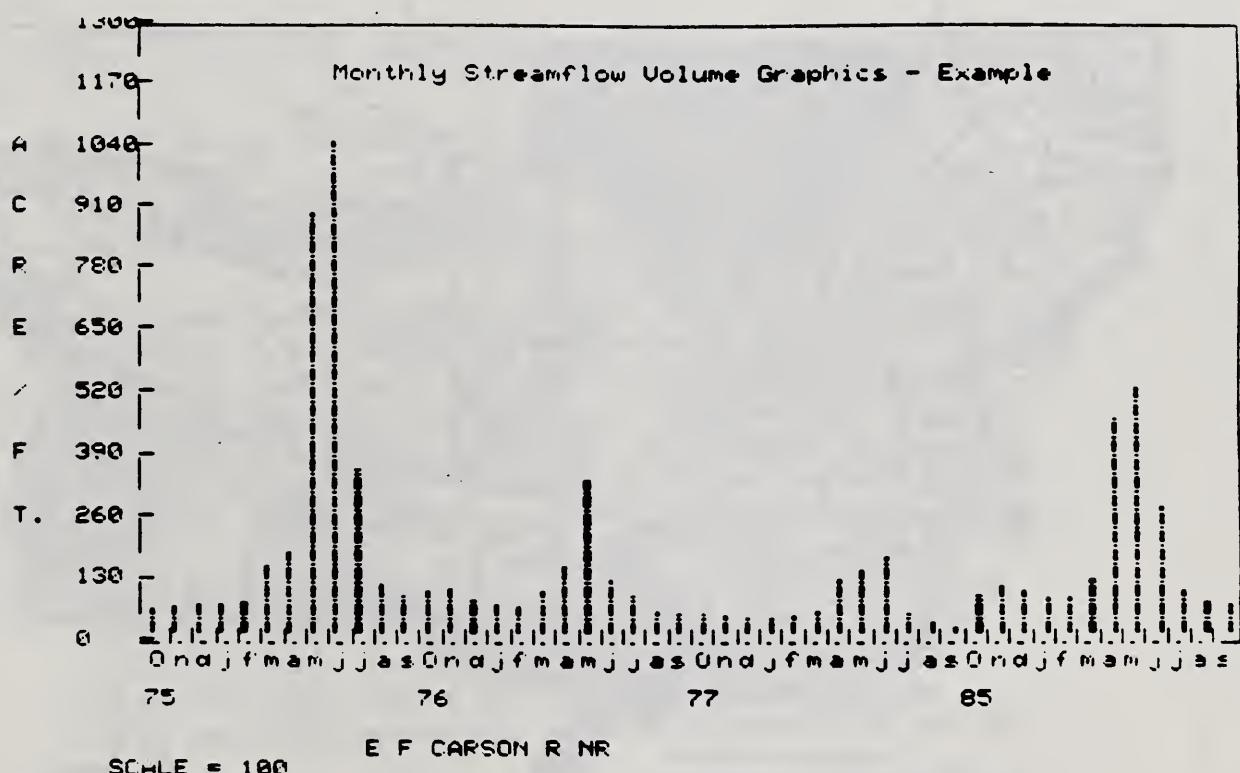
CFS menu path:CFS, DATABASE, GRAPHICS

Menu options:MONTHLY.

DESCRIPTION:

Bar graph for Tektronix 4000 + series graphics terminals or computers with Tektronix emulators. User develops CFS DATABASE file with TABLE command (datatype strm).

EXAMPLE:



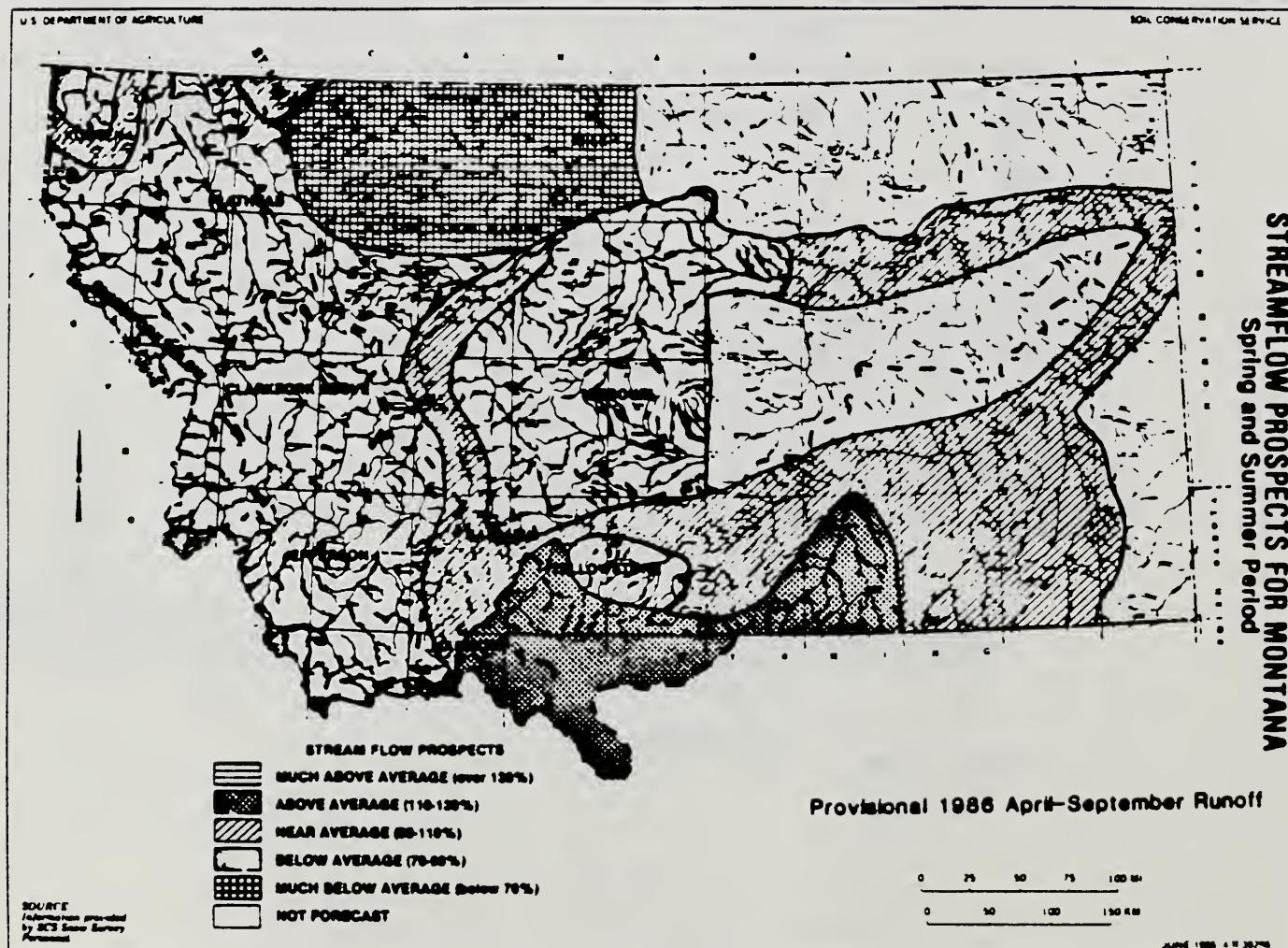
CODE:317

Keyname: Streamflow - Fall Report - SCS Snow Survey Program
Source: SCS, State Snow Survey Program (optional publication)
CFS menu path:
Menu options:

DESCRIPTION:

Optional fall publication by SCS state Snow Survey Program and cooperating agencies, shows current water year provisional streamflow (sometimes in form of a map).

EXAMPLE:



Keyname:Streamflow -site location information -downloadable file
 Source:CFS
 CFS menu path:CFS, DATABASE, DBQ
 Menu options:FLIST, FLISTBYID, FLISTBYNAME

DESCRIPTION:

 CFS, DATABASE commands which provide streamgage site location information according to the user query. Output is directed to a user named file rather than to the terminal screen. The file can be downloaded from the CFS, UTIL menu using the PRT option. FLISTBYNAME provides a list of site location information sorted alphabetically by sitename. FLISTBYID provides the list sorted by CFS I.D. Note that these commands are identical to LIST, LISTBYNAME and LISTBYID except that in the latter case output is directed to the user's terminal screen.

EXAMPLE:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	35	055	STRM	13020101	08255500	3658	10530		COSTILLA CREEK NEAR COSTILLA
2	35	023	STRM	15040002	09432000	3239	10851		GILA RIVER BLW BLUE CK MR VI
RDEN									
3	35	017	STRM	15040002	09430500	3304	10832		GILA RIVER NEAR GILA
4	35	043	STRM	13020202	08324000	3540	10644		JEMEZ RIVER MR JEMEZ
5	35	017	STRM	13030202	08477110	3251	10758		MIMBRES RIVER AT MIMBRES
6	35	047	STRM	13060001	08378500	3542	10541		PECOS RIVER NEAR PECOS
7	35	055	STRM	13020101	08267000	3639	10542		RED RIVER AT MOUTH NEAR QUES
TA									
8	35	039	STRM	13020102	08285500	3635	10643		RIO CHAMA INF TO EL VADO RES
ERVOIR									
9	35	049	STRM	13020101	08313000	3552	10608		RIO GRANDE AT OTOWI BRIDGE
10	35	053	STRM	13020203	08358400	3341	10659		RIO GRANDE AT SAN MARCIAL
11	35	055	STRM	13020101	08267500	3632	10533		RIO MUNDO NEAR VALDEZ
12	35	031	STRM	15020004	09386900	3517	10833		RIO MURRIA NEAR RAMAH
13	35	055	STRM	13020101	08276300	3623	10537		RIO PUEBLO DE TAOS BLW LOS C
ORDOVAS, NM									
14	35	003	STRM	15040004	09444000	3315	10853		SAN FRANCISCO RIVER MR GLENN
ODD									
15	35	049	STRM	13020101	08291000	3558	10554		SANTA CRUZ RIVER AT CUNDIYO
16	35	049	STRM	13020201	08316000	3541	10551		SANTA FE RIVER MR SANTA FE
17	35	031	STRM	15020004	09386950	3506	10845		ZUNI RIVER ABV BLACK ROCK RE
SERVOIR									

IV-98

CODE:400

Keyname:Reservoir storage -current water year

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, (RESV)

Menu options:LI

DESCRIPTION:

Current water year, end of the month, reservoir storage for selected reservoirs within a state or multistate basin. Displayed data will be for the end of the month prior to the user selected month number. Use the COMB option rather than the USA option whenever possible. Snow Survey personnel use the USA option to input reservoir and other WYFOR data at the end of the month. When they do so, the files are opened exclusively and may not be accessible to others.

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 8:39:55

RESERVOIR DATA

FEBRUARY 1987

MONTHLY VALUES

IDENT	STATION	FEB	MAR	APR	MAY	JUN	JUL
51350	LAKE PLEASANT	60.0	65.2	64.7	63.4	55.5	
50300	WATSON LAKE	4.3	4.4	3.9	4.2	3.8	
50350	WILLOW CREEK	3.8	5.3	5.1	4.0	1.8	
46900	SAN CARLOS	757.2	782.3	790.1	755.7	677.9	
51980	PAINTED ROCK DAM	0	0.0	0	0	0	
50100	SALT RIVER RES SYSTEM	1511.2	1621.0	1689.6	1672.0	1856.1	
50950	VERDE RIVER RES SYSTEM	236.0	293.6	306.8	299.5	264.3	
SRP	6 SALT RIVER PROJ. RES.	1747.2	1914.6	1996.4	1971.5	1591.8	
42750	LAKE HAVASU	547	553.0	576.7	613.6	613.4	
42250	LAKE MOHAVE	1711	1764.5	1728.2	1765.6	1633.9	

*** PAUSE ***

NEW-LINE to CONTINUE

E then NEW-LINE to END

CODE:401

Keyname:Reservoir monthly storage volume averages

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, DATA, (RESV)

Menu options:LI-

DESCRIPTION:

SCS Snow Survey Program standard 25 year average monthly reservoir storage values for selected reservoirs by state or multistate basin. Values given for months February through June.

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 8:41:12

R E S E R V O I R D A T A

FEBRUARY 1987

MONTHLY AVERAGES

IDENT	STATION	FEB	MAR	APR	MAY	JUN	JUL
51350	LAKE PLEASANT	78.1	85.3	92.2	91.5	86.6	
50300	WATSON LAKE	2.9	3.4	3.7	3.6	3.0	
50350	WILLOW CREEK	2.9	3.4	3.9	3.3	3.1	
46900	SAN CARLOS	329.4	368.0	387.5	386.4		
51980	PAINTED ROCK DAM	999.9	999.9	999.9	999.9		
50100	SALT RIVER RES SYSTEM	1202.8	1248.8	1330.7	1364.6	1341.5	
50950	VERDE RIVER RES SYSTEM	136.5	156.8	179.3	190.8	177.6	
SRP	6 SALT RIVER PROJ. RES.	1278.1	1346.7	1445.9	1495.6		
42750	LAKE HAVASU	546.4	542.7	559.9	591.7		
42250	LAKE MOHAVE	1664.0	1677.0	1675.0	1664.0		

*** PAUSE ***

NEW-LINE to CONTINUE

E then NEW-LINE to END

CODE:402

Keyname:Reservoir -current water year, monthly storage comparison
Source:CFS
CFS menu path:CFS, PROGRAMS, WYFOR, DATA (RESV)
Menu options:LO

DESCRIPTION:

Storage for selected reservoirs in state or multi-state basin-comparing requested month's current water year storage (beginning of month) to previous water year and 25 year average for same month. Use COMB for multi-state basin, USA for state, or CANA for Canadian reservoirs.

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 8:42:46

R E S E R V O I R D A T A

FOR THE END OF JANUARY 1987

RESERVOIR STATION	THIS YEAR	LAST YEAR	61-85 AVERAGE
LAKE PLEASANT	57.8	82.6	74.0
WATSON LAKE	4.1	3.7	2.3
WILLOW CREEK	2.6	3.6	2.1
SAN CARLOS	741.6	840.2	302.1
PAINTED ROCK DAM	0	22.2	999.9
SALT RIVER RES SYSTEM	1479.1	1442	1171.5
VERDE RIVER RES SYSTEM	217.7	212.9	115.8
6 SALT RIVER PROJ. RES.	1696.8	1655	1223.0
LAKE HAVASU	551.7	572.2	547.4
LAKE MOHAVE	1718.0	1647	1603.0
LAKE MEAD	24432	23147	19301.

*** PAUSE ***
NEW-LINE to CONTINUE
E then NEW-LINE to END

CODE:403

Keyname:Reservoir Basin Report -comparison with current water year and average.

Source:CFS

CFS menu path:CFS, PROGRAMS, WYFOR, ANAL, (RESV)

Menu options:BARE

DESCRIPTION:

Selected basin, reservoir storage comparison by state or multi-state basin for beginning of month as specified by user. The BARE option stresses current storage as it relates to capacity. For selected reservoirs in the state and for input of monthly data, use the USA option. For selected reservoirs in a multi-state basin use the COMB option.

EXAMPLE:

DATA CURRENT AS OF: 8/18/87 8:45:13

BASIN-WIDE
RESERVOIR SUMMARY

FOR THE END OF JUNE 1987

BASIN RESERVOIR	CURRENT AS % CAPACITY	LAST YEAR AS % CAPACITY	AVERAGE AS % CAPACITY	CURRENT AS % AVERAGE
SALT RIVER BASIN				
SALT RIVER RES SYSTEM	109	0	78	138
LAKE PLEASANT	35	0	55	64
TOTAL OF 2 RESERVOIRS (RAW AF TOTALS)	102	0	76	134 (CURRENT=1911.6) (LAST YEAR=.0) (AVG=1428.1) (CAP=1867.0)
VERDE RIVER BASIN				
VERDE RIVER RES SYSTEM	85	0	57	149

*** PAUSE ***
NEW-LINE to CONTINUE
E then NEW-LINE to END

Keyname:Reservoir location information by state, county, and SCS Field Office.
Source:CFS
CFS menu path:CFS, DATABASE, FLIP
Menu options:

DESCRIPTION:

Field location information program - locates and identifies CFS, DATABASE supported reservoirs by state, county, and SCS Field Office. This program serves as a preprocessor for the operational database (ODB). Users may create a downloadable file with reservoir location information which can be accessed under the CFS, UTIL menu.

EXAMPLE:

1. CFS DATABASE Sitename = HEBGEN LAKE
2. Local SCS Field Office location(s).....
.....Bozeman
3. County name (or other desig.).....Gallatin
4. State FIPS code.....30
5. County FIPS code number031
6. CFS Data Type.....RESERVOIR
7. USGS - Hydrologic Unit Code number (HUC).....10020007
8. CFS Site Identification Number (I.D).....0603B000
9. Latitude (degrees and minutes).....44,52
10. Longitude (degrees and minutes).....111,20
11. Elevation (feet).....0000
12. SHEF CODE (Standard Hydrologic Exchange Format)....HB6MB
13. Section23
14. Township11S
15. Range03E

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

CODE:405

Keyname:Reservoir storage values -previous water years - database.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (RESV)

Menu options:TABLE, CARD, PRELUDE

DESCRIPTION:

Period of record, historical (previous water years), end of month, reservoir storage for selected reservoirs by water year. Also displays average storage by month for all years and for 20 or 25 year standard period. Use the TABLE command for display and CFS graphics, the CARDS command for machine readability, and the PRELUDE command for FOCAS (SCS computers) format.

EXAMPLE:

`/cfs/cfs/data/resv16`
Station : 10055300, BEAR LAKE
----- Unit = acre-ft
Scale = 1000

year	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
61	768	771	774	777	785	809	814	761	688	585	512	476
62	476	478	480	485	526	548	706	839	866	816	751	717
63	716	716	717	719	761	777	804	821	863	774	698	683
64	682	697	700	709	723	745	801	869	995	958	880	836
65	823	830	878	905	926	947	1013	1150	1302	1357	1313	1293
66	1266	1253	1207	1173	1145	1131	1239	1299	1291	1162	1049	1046
67	1036	1038	1049	1059	1076	1099	1146	1206	1339	1358	1262	1190
68	1145	1103	1066	1042	1092	1129	1145	1164	1291	1214	1184	1166
69	1145	1110	1076	1043	1066	1044	1164	1259	1271	1245	1183	1151
70	1150	1133	1117	1119	1135	1139	1150	1171	1240	1208	1143	1111
71	1115	1127	1108	1099	1095	1091	1202	1331	1384	1361	1296	1234
72	1196	1159	1122	1103	1081	1127	1204	1299	1398	1363	1290	1224
73	1210	1180	1138	1115	1090	1067	1126	1239	1253	1212	1166	1154
74	1128	1127	1110	1098	1090	1095	1157	1271	1308	1268	1180	1106
75	1108	1120	1088	1069	1087	1110	1134	1194	1317	1349	1289	1217
76	1150	1114	1093	1071	1051	1035	1137	1267	1293	1259	1220	1169
77	1131	1095	1060	1031	1040	1058	1050	1074	949	853	800	786
78	765	760	765	775	786	801	851	933	1026	1025	966	939
79	957	960	978	1005	1026	1039	1092	1134	1127	1036	1000	936
80	947	937	938	973	1005	1033	1114	1317	1366	1349	1237	1182
81	1122	1090	1059	1047	1053	1047	1070	1075	1083	1015	931	882
82	872	873	883	904	921	958	1005	1153	1259	1314	1292	1240
83	1231	1193	1177	1160	1114	1102	1104	1280	1404	1403	1370	1323
84	1249	1177	1136	1110	1078	1056	1111	1275	1398	1390	1346	1280
85	1212	1161	1093	1077	1061	1046	1131	1263	1276	1255	1177	1127

all
years
ave 813 802 794 794 803 826 886 962 996 951 886 840
years (59) (59) (59) (59) (59) (59) (59) (59) (59) (59) (59) (59) (59)

1961-1985 average :
1024 1008 993 988 993 1002 1059 1145 1197 1165 1103 1060
years (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25)

Note : These are End of Month readings. Units in acre feet.

CODE:406

Keyname:Reservoir storage -historical database, statistical analyses.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ (RESV)

Menu options:COLSUM

DESCRIPTION:

Frequency and probability analyses of historical reservoir storage data for user selected period within water year. See also code 407 -INDEX.

EXAMPLE:

Gage No. Station : 14213700,816 SAMOY

Ranks NY	Apr #	Total acre-ft	Weibull plotpos	Value log10
1	54	11100	11100	0.036 4.045
2	55	12800	12800	0.071 4.107
3	56	12200	12200	0.107 4.086
4	57	13000	13000	0.143 4.114
5	58	35400	35400	0.179 4.549
6	59	7700	7700	0.214 3.886
7	60	8300	8300	0.250 3.919
8	61	8000	8000	0.286 3.903
9	62	13200	13200	0.321 4.121
10	63	12100	12100	0.357 4.083
11	64	14800	14800	0.393 4.170
12	65	10500	10500	0.429 4.021
13	66	38500	38500	0.464 4.585
14	67	16000	16000	0.500 4.204
15	68	28900	28900	0.536 4.461
16	69	39000	39000	0.571 4.591
17	70	15800	15800	0.607 4.199
18	71	13800	13800	0.643 4.140
19	72	31300	31300	0.679 4.496
20	73	37200	37200	0.714 4.571
21	74	30900	30900	0.750 4.490
22	75	23000	23000	0.786 4.362
23	76	30500	30500	0.821 4.484
24	77	24400	24400	0.857 4.387
25	78	34000	34000	0.893 4.531
26	79	30600	30600	0.929 4.486
27	80	24600	24600	0.964 4.391

number of values = 27
arithmetic average = 21393 log average = 4.273

std. deviation = 10650 log std. dev. = 0.232
coeff of variation = 0.50 log coeff. var. = 0.054
arithmetic skew = 0.310 log skew = -0.113

I	Exceed Prob	Return Period	Normal Probability	Log Normal Probability	LPS Probability
99.00	1.010	0	5418	5183	
95.00	1.053	3874	7795	7666	
90.00	1.111	7740	9463	9408	
80.00	1.250	12426	11970	12011	
50.00	2.000	21393	18769	18758	
20.00	5.000	30360	29429	29502	
10.00	10.000	35046	37227	34965	
5.00	20.000	38911	45192	44495	
1.00	100.000	46164	65021	62292	

Keyname:Reservoir -historical database -graphics

Source:CFS

CFS menu path:CFS, DATABASE, GRAPHICS (or GSS)

Menu options:COMP, DAILY, MONTHLY, PARTIAL

DESCRIPTION:

CFS graphics display -bar plot and/or line graph- of historical daily (RESD) and monthly (RESV) volume for user selected reservoirs for which data is available in the operational database (ODB). Current graphics are designed for TEXTRONIX 4000 series graphics terminals and for computers with TEKTRONIX emulation software. User develops a reservoir file using datatype RESD or RESV and the TABLE command. Note that daily reservoir data is available for very few reservoirs and only selected reservoirs are represented in the operational database.

EXAMPLE:

Weight: 1.00 Station: 10312100, LAWONTAN RESERVOIR, NY

Year (Wt.)	Start Yr.	70	End Yr.	86	INDEX TOTAL
	April (1.00)	May (1.00)			
70	227400	258500	485900		
71	235200	284700	519900		
72	277000	294400	571400		
73	256300	289400	545900		
74	262000	286600	548600		
75	249600	271600	521200		
76	219700	187300	487000		
77	172500	157300	329800		
78	212000	246000	458000		
79	272600	307400	580000		
80	246000	263600	509600		
81	236000	234000	470000		
82	247000	280000	527000		
83	182000	215000	397000		
84	219000	244000	463000		
85	275000	276300	551300		
86	290200	299100	589300		
		AVERAGE	498524		
		MAXIMUM	589300		
		MINIMUM	329800		

number of values = 17
arithmetic average = 498524 log average = 5.693
std. deviation = 71002 log std. dev = 0.067
coeff of variation = 0.14 log coef. var. = 0.012
arithmetic skew = -0.921 log skew = -1.263

Exceed Prob	Return Period	Moreal Probability	Log Moreal Probability	LPI Probability
99.00	1.010	333373	344187	301212
95.00	1.053	381725	382426	366542
90.00	1.111	407499	404516	400929
80.00	1.250	438740	433010	440977
50.00	2.000	498524	493251	509123
20.00	5.000	558307	561873	561732
10.00	10.000	587348	601450	582292
5.00	20.000	615322	636192	595400
1.00	100.000	663674	704873	613242

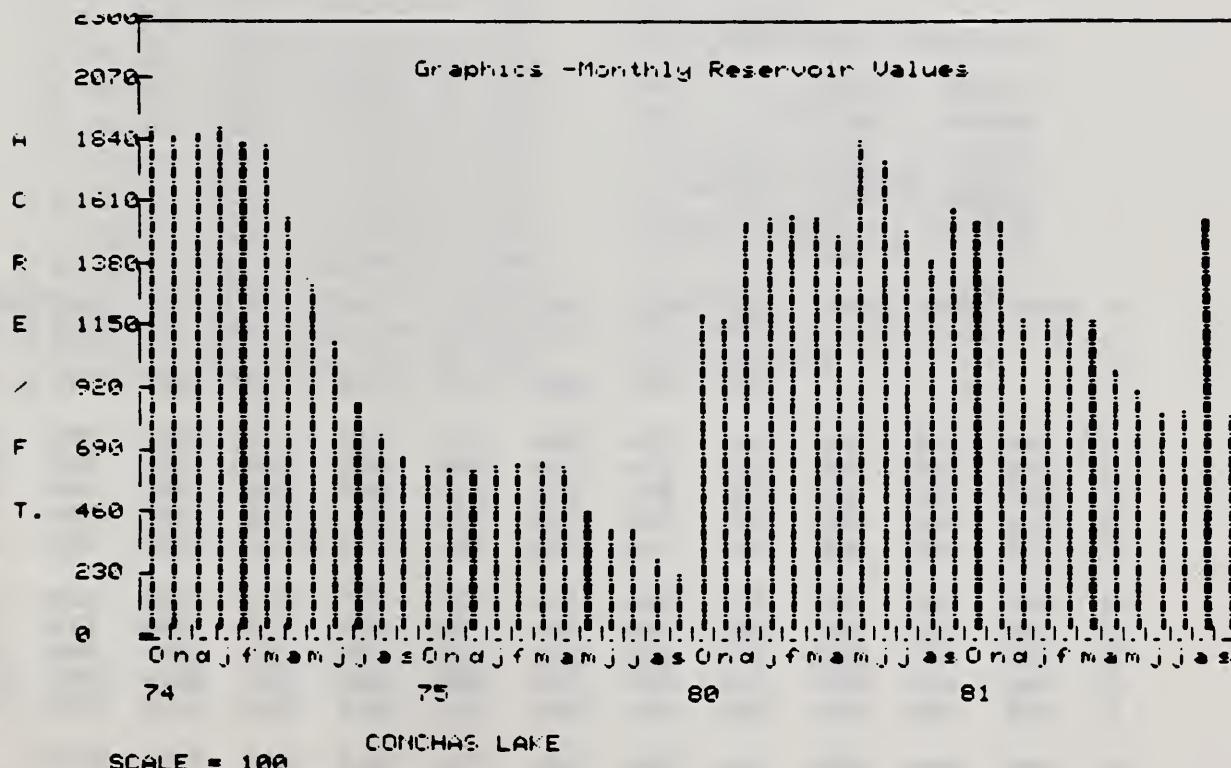
CODE:408

Keyname:Reservoir storage values -historical database -132 column fomrat
Source:CFS
CFS menu path:CFS, DATABASE, DBQ, (RESV)
Menu options:TABLE132

DESCRIPTION:

Historical reservoir storage volume (acre feet) by month, by water year, for selected reservoirs in the western states. Presented in tabular format for 132 column printout. This product is essentially the same as CODE 405 except that it shows values in true acre feet and includes a header with site locationa information.

EXAMPLE:



CODE:409

Keyname:Reservoir Location Information

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (RESV)

Menu options:FLIST (FLISTBYNAME, FLISTBYID)

DESCRIPTION:

Reservoir site location information for selected reservoirs which are affected by or are related to streamflow forecasting in the western states. The DBQ (database) command "flist" allows the user to store screen output from a "find" query in a user named file which can be accessed from the UTIL menu. FLIST, like the LIST command displays only site locational information. It does not display site data! Other options include "FLISTBYID" (create a downloadable file with stations sorted by CFS I.D.) and "FLISTBYNAME" (create a downloadable file with stations sorted alphabetically). User named files reside in the user directory and can be accessed with the CFS, UTIL menu PRT command.

EXAMPLE:

Station Name : PUEBLO RESERVOIR

ID Number = 07007070
Datatype = RESV
Elevation = Ft.
Latitude = 38 Deg. 16 Min.
Longitude = 104 Deg. 44 Min.
HUC #, Name = 11020002, Upper Arkansas
County = Pueblo, Colorado

yr	October	November	December	January	February	March	April	May	June	July	August	September
73												
74				0	3200	14000	18300	14400	17500	17300	16800	16400
75	19600	20400	20300	20400	20300	20000	27200	28200	29900	29800	28800	28700
76	27400	37900	49400	59600	68700	69300	51400	40700	39000	35200	31500	33000
77	45000	63000	73100	81800	88300	87900	81500	64400	53400	37500	31900	30900
78	30100	30000	28900	28800	28700	28200	30300	29400	27800	32200	28100	27200
79	27300	33500	45200	54100	63700	65300	62700	57100	62600	63900	68700	42600
80	30700	35100	35400	72100	83700	90600	89000	92400	92100	78600	31600	31100
81	32500	47500	69600	83800	90800	89600	74200	60900	44500	26300	27500	29200
82	29600	36300	53400	74300	96600	106300	86500	71900	79000	58500	58400	57200
83	65000	91400	130700	165100	196200	213800	209900	206300	249500	254900	234300	217500
84	207100	217200	238500	258400	272000	278800	260900	258400	258100	258100	247000	242600
85	246900	260400	290300	294200	293000	287900	257500	264300	264600	264000	252100	
all years												
ave	68653	79336	87900	99650	109667	113000	103792	99308	101483	96650	86358	69082
yrs	(11)	(11)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(11)
1961-1983 average :												
ave	68653	79336	87900	99650	109667	113000	103792	99308	101483	96650	86358	69082
yrs	(11)	(11)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(12)	(11)

Note : These are End of Month readings. Units in acre feet.

Keyname:Reservoir Storage, monthly volume, published by state - current water year.

Source:Snow Survey Program, State Water Supply Outlook Report

CFS menu path:(publication)

Menu options:

DESCRIPTION:

Generalized narrative description of statewide reservoir storage conditions. Published monthly, January through June, -as part of the State Water Supply Outlook Report- and mailed out by the second week of the following month. Same report is available through the CFS (see CODE 412) and is available via computer.

EXAMPLE:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	35	019	RESV	13060001	08008360	3502	10442		SANTA ROSA RESERVOIR
2	35	039	RESV	13020102	08108010	3614	10626		ABIQUEU RESERVOIR
3	35	051	RESV	13030101	08108020	3254	10718		CABALLO RESERVOIR
4	35	047	RESV	11080003	08108030	3524	10411		CONCHAS LAKE
5	35	043	RESV	13020201	08108040	3537	10619		COCHITI LAKE
6	35	055	RESV	13020101	08108050	3653	10517		COSTILLA RESERVOIR
7	35	039	RESV	13020102	08108060	3636	10644		EL VADO RESERVOIR
8	35	051	RESV	13020211	08108070	3309	10711		ELEPHANT BUTTE RESERVOIR
9	35	039	RESV	13020102	08108080	3640	10642		HERON RESERVOIR
10	35	015	RESV	13060011	08108090	3229	10415		LAKE AVALON
11	35	015	RESV	13060011	08108100	3236	10421		LAKE MCMILLAN
12	35	011	RESV	13060001	08108110	3436	10423		LAKE SUMMER
13	35	039	RESV	14080101	09109090	3648	10737		NAVAJO RESERVOIR

CODE:411

Keyname:Reservoir Storage Condition narrative, by state -current water year.
Source:CFS
CFS menu path:CFS, PRODUCTS, WSOR, (REP80, REP, BULL, BULL80)
Menu options:SLUGLINE.

DESCRIPTION:

Computer accessed, generalized narrative statement pertaining to current reservoir storage conditions for the end of the month (January through June). Month and state are selected by the user. This is the same narrative which is published in the State Water Supply Outlook Report but it is available two to three weeks earlier via CFS (see CODE 410).

EXAMPLE:

RESERVOIRS

THE 69 RESERVOIRS IN COLORADO ARE CURRENTLY STORING 147 PERCENT OF THE MARCH FIRST AVERAGE. THE 10 RESERVOIRS USED TO INDEX NEW MEXICO'S RESERVOIRS, INDICATE THE CURRENT STORAGE IS 659 PERCENT OF THE AVERAGE. THIS RELATES TO 64 PERCENT OF THE TOTAL CAPACITY FOR STORAGE. ALL BASINS IN COLORADO ARE REPORTING ABOVE AVERAGE RESERVOIR STORAGE. THE HIGHEST STORAGE OCCURS IN THE ARKANSAS AND RIO GRANDE BASINS, WHICH ARE CURRENTLY STORING TWO TO THREE TIMES THE AVERAGE. CABALLO AND ELEPHANT BUTTE RESERVOIRS ARE CURRENTLY STORING A MUCH GREATER VOLUME THAN NORMAL FOR MARCH FIRST.

CODE:412

Keyname:Reservoir Storage, monthly, by basin, by state -current
water year
Source:State Water Supply Outlook Report (publication)
CFS menu path:
Menu options:

DESCRIPTION:

Tabular presentation of selected reservoir storage volume and
condition by major basin within state.

EXAMPLE:

RESERVOIRS

RESERVOIR STORAGE THROUGHOUT COLORADO AND NEW MEXICO
IS ABOVE THE FEBRUARY FIRST AVERAGE. STORAGE IN
COLORADO'S MAJOR RIVER BASINS RANGES FROM 110 PERCENT
OF AVERAGE IN THE SOUTH PLATTE BASIN, TO A HIGH OF
311 PERCENT OF AVERAGE IN THE ARKANSAS BASIN.
STATEWIDE, COLORADO'S RESERVOIRS ARE STORING 46
PERCENT ABOVE AVERAGE AMOUNTS. RESERVOIR STORAGE IN
NEW MEXICO IS MORE THAN SEVEN TIMES THE AVERAGE.
ELEPHANT BUTTE RESERVOIR IS CURRENTLY STORING 97
PERCENT OF THE TOTAL CAPACITY, WHILE ABQIU IS ONLY
STORING 29 PERCENT OF CAPACITY.

CODE:413

Keyname:Reservoir storage, monthly, by basin, by state, current water year.

Source:CFS

CFS menu path:CFS, PRODUCTS, WSOR, (REP80, REP, BULL80, BULL)

Menu options:(user selected basin)

DESCRIPTION:

Tabular and narrative presentation of selected reservoir storage conditions within user selected state and basin - available during the current water year, on a monthly basis, January through June. The tabular output is also available in the monthly, State Water Supply Outlook Report publication (see CODE 412).

EXAMPLE:

RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE			(1000AF)	
		USEABLE STORAGE		AUG.		
		THIS YEAR	LAST YEAR			
ISLAND PARK	127.6	124.2	95.9	119.3		
GRASSY LAKE	15.2	13.3	12.9	11.2		
JACKSON LAKE	624.4	113.4	148.8	525.9		
PALISADES	1357.0	1223.2	1068.4	968.2		
AMERICAN FALLS	1700.0	1630.9	1094.9	1452.3		
BROWNLEE	975.3	824.8	875.8	449.1		
BLACKFOOT		NO REPORT				
HENRY'S LAKE	90.4	83.2	—	80.1		
RIRIE	96.5	88.2	—	53.1		

CODE:414

Keyname:Reservoir -Western states reservoir storage conditions - publication

Source:Water Supply Outlook for the Western United States.

CFS menu path:(publication)

Menu options:

DESCRIPTION:

Graphic presentation of reservoir storage conditions for the western states, published monthly, January through May, jointly by the SCS and National Weather Service.

EXAMPLE:

RESERVOIR STORAGE (1000AF)

RESERVOIR	USABLE CAPACITY	++ USABLE STORAGE ++		
		THIS YEAR	LAST YEAR	AVE.
HUNGRY HORSE	3451.0	2402.0	2295.0	2410.0
FLATHEAD LAKE	1791.0	840.2	1124.0	1145.0
PEND OREILLE	1561.2	212.7	755.6	831.8
MOXON RAPIDS	335.0	295.8	158.8	313.0
COEUR D'ALENE	291.2	88.2	125.4	220.9
PRIEST LAKE	97.7	29.8	33.3	34.4

CODE:415

Keyname:Reservoir -Fall Report -optional publication

Source:SCS, state Snow Survey Program (optional)

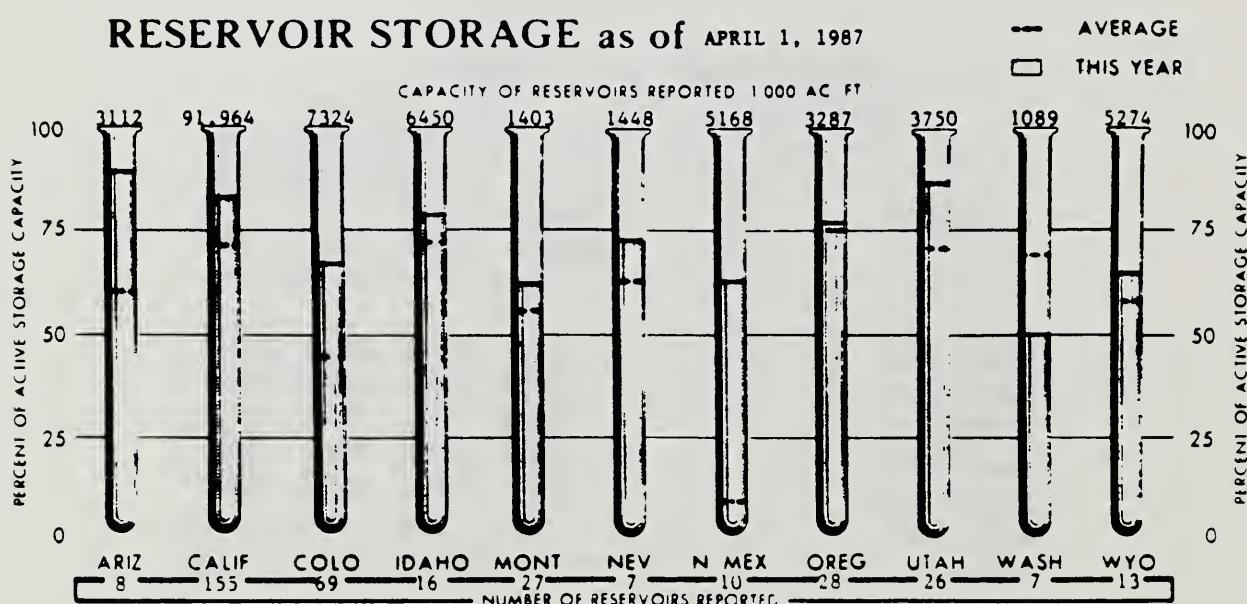
CFS menu path:

Menu options:

DESCRIPTION:

Optional, SCS, state Snow Survey Program (and cooperating agencies) publication. Lists or depicts state or basin reservoir storage condition for the current water year.

EXAMPLE:



Keyname:Reservoir -Fall Report -optional publication

Source:SCS, state Snow Survey Program (optional)

CFS menu path:(publication)

Menu options:

DESCRIPTION:

Optional, SCS, state Snow Survey Program (and cooperating agencies) publication. Lists or depicts state or basin reservoir storage condition for the current water year.

EXAMPLE:

----- RESERVOIR STORAGE (Thousand Acre-Feet) End of Month September 30, 1986

BASIN OR STREAM	RESERVOIR	USEABLE CAPACITY	USEABLE STORAGE		
			THIS YEAR	LAST YEAR	AVERAGE
<u>COLUMBIA</u>					
Kootenai	Koocanusa	5,748.2	5,126.0	5,086.0	5,164.0
Flathead	Hungry Horse	3,451.0	2,995.0	2,678.0	3,189.0
	Flathead Lake	1,791.0	1,761.0	1,767.0	1,735.0
	Camas (4)	45.2	20.8	16.7	18.1
	Mission Valley (8)	100.3	23.3	32.1	26.8
Clark Fork	Georgetown Lake	31.0	30.5	23.1	28.3
	Lower Willow Creek	4.9	0.9	0.5	0.9
	Nevada Creek	12.6	---	2.3	4.0
	Noxon Rapids	334.6	324.4	317.6	326.4
Bitterroot	Painted Rocks	31.7	---	---	22.6
	Como	34.9	2.4	0.6	2.5
<u>MISSOURI</u>					
Beaverhead	Lima	84.0	23.6	14.5	30.0
	Clark Canyon	255.6	137.7	92.8	120.6
Ruby	Ruby	38.8	11.4	8.0	11.8
Madison	Hebgen Lake	377.5	349.6	357.2	336.5
	Ennis Lake	41.0	37.3	35.1	36.7
Gallatin	Middle Creek	8.0	3.9	3.7	3.1
Missouri	Canyon Ferry	2,043.0	1,734.0	1,630.0	1,748.0
	Hauser & Helena	61.9	63.0	63.0	58.9
	Helena Valley	9.2	6.5	5.9	6.9
	Lake Helena	10.4	10.9	10.9	10.4
	Holter Lake	81.9	81.0	81.0	77.8
	Fort Peck Lake	18,910.0	15,960.0	14,140.0	16,090.0
Smith	Smith River	10.6	7.8	3.5	5.6
	Newlan Creek	12.4	11.3	9.5	10.1
Musselshell	Bair	7.0	5.7	0.0	3.2
	Martinsdale	23.1	12.0	0.2	9.7
	Deadman's Basin	72.2	---	11.9	35.4
Sun	Gibson	99.1	30.3	43.9	29.1
	Willow Creek	32.2	25.0	15.1	19.4
	Pishkun	32.0	5.8	19.8	16.7
Marias	Lower Two Medicine	11.9	---	---	4.6
	Four Horns	19.2	---	---	11.6
	Swift	30.0	10.0	8.2	11.9
	Lake Frances	111.9	74.4	32.5	71.2
Milk	Elwell (Tiber)	1,347.0	807.8	794.4	606.7
	Beaver Creek	3.5	3.1	2.0	2.1
	Fresno	127.2	67.8	52.0	67.6
	Nelson	66.8	54.3	14.3	42.2
<u>HUDSON BAY</u>					
St. Mary's	Lake Sherburne	64.8	21.9	4.2	7.6
<u>YELLOWSTONE</u>					
Stillwater	Mystic Lake	21.0	18.6	19.7	19.5
Clark's Fork	Cooney	27.4	16.5	9.2	13.2
Tongue	Tongue River	68.0	16.1	12.5	24.8
Bighorn	Bighorn Lake	1,356.0	1,025.0	875.1	749.0

IV-116

CODE:500

Keyname:Temperature -SNOTEL daily telemetered values, -SNOTEL computer, current water year
Source:SNOTEL coputer, Portland, Oregon.
CFS menu path:
Menu options:RE, NA

DESCRIPTION:

One of the four main SNOTEL sensor values. Data is unedited until about the 15th day after it is received. Historical SNOTEL temperature data is stored in the Operational Database and at Fort Collins, CO on the System 2000 database. Most daily temperature data is available on the SNOTEL computer after 7: am PST. The data is transferred to the CFS computer at approximately 9:30 am PST and can then be accessed on that computer via the WYSNO menu. Users should contact state Snow Survey Program personnel for a SNOTEL users manual and access procedures.

EXAMPLE:

7/14/78 8:05

DATA REPORT FOR COOP

NAME : LAST 10
TIME : LAST 10 DAYS

NOTE:ALL DATA IN ENGINEERING UNITS (IN TENTHS XXX.X)
EXCEPT DATA MARKED 'N' WHICH IS A STRAIGHT VOLTAGE READING

REMOTE SITE NAME ELEVATION

MM/DD/YY HH:MM BATT SNOW RAIN AIR

MOSQUITO RIDGE EL: 10100

7/ 6/78 14:16 127V 12V 123V 159V
7/ 6/78 18: 3 127V 12V 123V 199V
7/ 7/78 5:43 124V 14V 125V 104V
7/13/78 10:23 129V 10V 125V 114V
:24 132V 12V 125E 118V
% OF AVERAGE 85.2% 103.0%

ABOVE BURKE

7/ 5/78 4:55 119V 56V 101V 120V
7/ 5/78 12:58 120V 55V 101V 120V
% OF AVERAGE 102.5% 88.0%

LONE PINE EL: 9500

NO ON-LINE DATA

BIG BOULDER CREEK EL: 10500

7/ 5/78 4:55 123V 172V 100V 118V
7/12/78 12:39 124V 175V 104V 115V
7/13/78 10:30 126V 172V 106V 114V
7/14/78 5:30 129V 172V 106E 100V
% OF AVERAGE ???.?% ???.?%

CODE: 501

Keyname:Temperature -SNOTEL telemetered sensor values, current water year, daily temperature

Source: CFS

CFS menu path:CFS. DATABASE. WYSNO

Menu options: DGRE, DGNA

DESCRIPTION:

One of the four main sensor values received from SNOTEL sites. Daily temperature at time of poll and for some sites, previous 24 hour period, tmax., tmin., and tavg. SNOTEL data are transferred to the CFS after 9:30 am PST. All data are unedited for about the first 15 days after polling. DGRE option allows user to look at a report with specific sites and for a specific time period during the current water year. The DGNA option allows the user to store the site and time period format and to retrieve updated data reports throughout the water year. WYSNO allows user to capture the information to a downloadable file.

EXAMPLE:

**United States Soil West National Technical Center
Department of Conservation Water Supply Forecasting Staff
Agriculture Service Portland, OR**

MOTEL DATA REPORT

** Provisional data, subject to revision. **

08/18/87 09:37 PST

Site Name	MM/DD (PST)	Water Content	Precip (YTD)	AM Temp	Max	Min	Previous Days Avg
MT_HOOD_TEST_SITE	08/17 0603	0.0	79.7	39	48	32	39
	08/18 0500	0.2	79.7	44	61	39	49
BEAR_BASIN	08/17	** no report **		21.9	29		
	08/18 0510	0.0					

**** Provisional data, subject to revision. ****

-> Precip(YTD) = 10/1/86 to date.

-> Water Content and Precipitation is recorded in Inches.

=> Temperature data recorded in degrees Fahrenheit.

=> Current days SMOTEL data posted after 8:30 PST daily.

Keyname:Temperature -SNOTEL, current water year, daily values, through CFS computer.
 Source:CFS / SNOTEL
 CFS menu path:CFS, DATABASE, WYSNO
 Menu options:CALLHP

DESCRIPTION:

 Standard SNOTEL daily report which includes temperature sensor values. CALLHP is a CFS computer, direct connection to the SNOTEL computer. Users who access SNOTEL through the CALLHP option should be familiar with SNOTEL commands. Most SNOTEL sensor values are transferred to the CFS computer at about 9:30 AM PST. CALLHP allows user to access SNOTEL data at or near the actual time of poll (early AM). SNOTEL sensor values accessed via CALLHP are presented in a cryptic format. All data is provisional up to at least the first 15 days following polling.

EXAMPLE:

 8/18/87 9:37
 TEKTRONIX REPORT FOR AR04
 TIME : LAST 2 DAYS
 TIMES SHOWN ARE PACIFIC TIME
 NOTE: DATA MARKED 'NN' IS A STRAIGHT VOLTAGE READING

 SENS 1 SENS 2 SENS 3 SENS 4 SENS 5 SENS 6 SENS 7 SENS 8 SENS 9 SENS 10 SENS 11 SENS 12 SENS 13 SENS 14 SENS 15 SENS 16

 MT HOOD TEST SITE

 DATE TIME BATT LV15 RH20 TRCC LM1 LM2 SW17 SW18 SW19 SW10 TRAC TRIC TAVC
 8708170603 1 11.9V 0.0V 79.7V 4.4V 21.8V 0.0V 0NN 0NN 0NN 0NN 9.4V 0.2V 4.3V
 8708180500 1 12.0V 0.2V 79.7V 7.2V 22.0V 0.0V 0NN 0NN 0NN 0NN 16.6V 4.1V 9.7V

Keyname:Temperature -SNOWTEL sensor -current and previous water year database

Source:CFS

CFS menu path:CFS, DATABASE, WYSNO, WYSQ

Menu options:TABLE CARD

DESCRIPTION:

Current and previous water year SNOWTEL data which includes time of poll temperature, and sometimes previous 24 hour period, tmax., tmin., and tavg. values. Data are presented in the standard CFS DATABASE, TABLE format which is directly compatible with the CFS DBQ format. The user may name a file to receive WYSQ data and then merge that file with another one (historical SNOWTEL temp. data) from the CFS DATABASE. All CFS, user named files are accessible for downloading under the CFS, UTIL menu. All WYSQ data is compatible with daily data graphics routines under the GRAPHICS (and GSS) menu. All SNOWTEL data is considered provisional for at least the first 15 days following the poll.

EXAMPLE:

```
/cfs/snowtel/data/orreq 87 temp
```

```
SNOWTEL Sitename : MT HOOD TEST SITE
```

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
---	---	---	---	---	---	---	---	---	---	---	---	---
1	-0.4	1.1	-1.2	-2.0	0.6	-2.6	8.4	-1.6	-2.8	13.7	3.5	
2	-1.1	6.7	-2.8	-4.6	-2.5	-1.3	8.2	-3.3	0.4	11.2	7.5	
3	1.0	8.0	-4.5	-1.5	-3.3	1.9	-0.2	0.6	11.8	8.7	14.4	
4	4.1	7.0	0.4	-3.7	-1.5	4.0	-2.0	4.9	13.3	8.7	15.1	
5	11.9	3.0	-0.7	-3.6	1.6	3.1	-1.7	6.6	9.3	2.8	9.6	
6	12.5	-1.8	-3.4	-7.5	4.8	-3.0	-3.5	14.4	1.6	9.1	8.2	
7	10.0	-3.3	-1.4	-0.7	4.7	-4.8	-0.5	15.8	13.0	4.4	14.4	
8	7.4	-3.9	-3.7	-7.6	5.1	0.6	-2.8	13.4	8.9	4.7	17.3	
9	6.1	-2.2	-1.5	-6.1	2.8	-1.7	-4.1	11.7	4.9	4.1	16.3	
10	7.4	-9.7	2.3	1.3	1.6	-0.7	0.7	8.9	3.2	5.0	6.5	
11	4.0	1.4	2.0	4.4	-0.3	-1.4	-4.6	7.9	8.3	10.6	4.9	
12	7.2	0.0	-1.4	0.1	-0.8	0.5	-5.1	4.2	8.4	11.9	6.7	
13	8.1	1.1	-0.5	-7.2	-0.1	-1.6	-2.7	2.0	11.3	12.5	4.9	
14	7.9	-0.3	-2.6	-7.5	-3.2	-2.5	1.8	7.1	13.1	16.4	4.0	
15	9.5	-3.1	-3.4	-12.7		-4.5	1.8	6.1	3.9	13.8	4.7	
16	9.1	-2.0	-2.3	-10.6	-4.6	-4.4	2.8	-2.4	-0.8	0.2	1.0	
17	2.3	-2.8	-0.8	-4.1	-4.3	-0.9	-0.4	1.3	-1.2	5.1	4.4	
18		0.1	-2.4	-4.1	-6.2	-6.8	-7.0	-4.1	6.2	3.0	7.2	
19	10.6	-1.1	-2.2	-7.6	-5.0	-6.9	-7.3	-4.1	6.0	2.3		
20	10.7	3.3	-2.9	-3.7	-4.8	-5.9	-4.2	-1.5	9.3	10.2		
21	6.1	-2.5	0.3	1.5	-4.1	-4.1	3.6	-0.2	1.6	11.5		
22	6.8	-2.8	-0.1	0.3	-5.9	-6.4	5.4	1.3	-0.4	4.3		
23	8.9	1.0	-2.4	-2.0	-7.1	-2.3	4.8	3.6	5.2	6.2		
24	7.0	1.0	-3.5	-1.9	-9.0	-6.5	2.1	3.0	7.8	7.9		
25	-5.5	-3.8	-3.1	-9.0	-3.5	1.7	1.2	15.2	5.4			
26	0.0	-0.4	-0.2	-9.2	-6.6	8.5	-0.6	14.9	10.7			
27	2.1	-0.5	-2.7	0.7	-4.6	-8.2	10.1	-0.4	15.4	4.6		
28	-0.3	-1.9	0.8	-4.4	-7.1	-6.4	9.1	0.3	10.1	9.6		
29	4.4	-4.8	0.0	-3.0		-3.7	6.8	-1.4	17.7	9.4		
30	-0.1	-3.3	-6.1	-2.5		1.3	3.5	3.1	16.0	4.8		
31	1.9	---	-3.0	-2.5		3.2		-0.7	—	1.5	—	
mean	5.9	-0.6	-1.7	-3.7	-2.6	-2.6	1.1	3.1	7.7	7.6	8.4	
max	12.5	8.0	2.3	4.4	5.1	4.0	10.1	15.8	17.7	16.4	17.3	
min	-1.1	-9.7	-6.1	-12.7	-9.2	-8.2	-7.3	-4.1	-2.8	.2	1.0	

Keyname:Temperature -SNOTEL and NOAA climate station locations by SCS field office.

Source:CFS

CFS menu path:CFS, DATABASE, FLIP

Menu options:NOAA sites and SNOTEL sites

DESCRIPTION:

CFS, Field Location Information Program which relates DATABASE supported climate, SNOTEL, streamflow, and other stations to SCS field office jurisdictions and to county names. The FLIP program serves as a pre-processor program to the CFS, DATABASE query system (DBQ). Users may send all information displayed in FLIP to a user named file. The file may be downloaded from CFS under the UTIL menu.

EXAMPLE:

1. CFS DATABASE Sitename = KOOSHAREM
2. Local SCS Field Office location(s).....
.....Richfield / Loa
3. County name (or other desig.).....Sevier
4. State FIPS code.....49
5. County FIPS code number041
6. CFS Data Type.....NOAA CLIMATE STATION
7. USGS - Hydrologic Unit Code number (HUC).....16030002
8. CFS Site Identification Number (I.D).....4764
9. Latitude (degrees and minutes).....38,31
10. Longitude (degrees and minutes).....111,53
11. Elevation (feet).....6930
12. SHEF CODE (Standard Hydrologic Exchange Format)....KOOU1
13. Section
14. Township 269
15. Range 01W

Listed above are major CFS, DATABASE query components for this Site. Would you care to look at another SITE in the same COUNTY (Y/N)?

CODE:505

Keyname:Temperature -SNOWTEL site, sensor and location database.
Source:CFS
CFS menu path:CFS, DATABASE, SLIP
Menu options:

DESCRIPTION:

SNOWTEL site location information and sensor configuration / history database and query system. Like the FLIP program, SLIP does not provide SNOWTEL sensor data but rather, site and sensor information. The SLIP program was primarily designed for Snow Survey Program staff use.

EXAMPLE:

SITENAME	STATE STA. SHEF	ELEV.	LAT.	LONG.	MUC	SEN	YR
BIG RED MOUNTAIN	OR 22621S BRM03	6250	4203	12251	17100309	1	1980
COLD SPRINGS CAMP	OR 22624S CSC03	6100	4232	12211	18010203	1	1980
MT. HOWARD	OR 17D18S MHM03	7910	4516	11710	17060105	1	1980
SEVENMILE MARSH	OR 22633S SVM03	6200	4241	12208	18010203	1	1980
SNOW MOUNTAIN	OR 19F01S SMW03	6220	4357	11933	17120004	1	1978
SUMMER RIM	OR 20602S SMR03	7100	4242	12049	18010202	1	1977

Keyname: Temperature -SNOTEL, telemetry and other snow data sites location map.

Source: State, Snow Survey Program Annual Data Summary - publication.

CFS menu path:

Menu options:

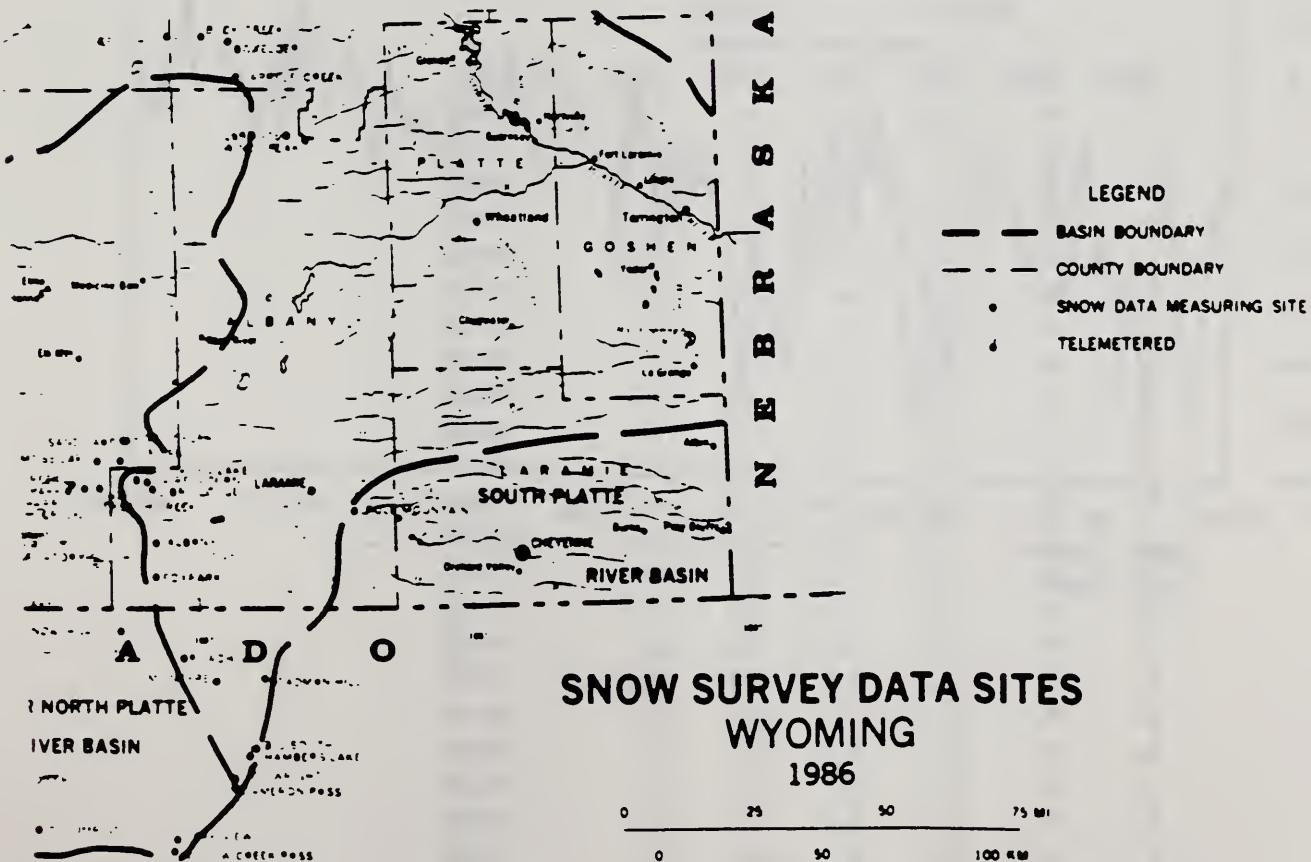
DESCRIPTION:

State, snow data site map included with publication -Annual Data Summary. Map shows location of snow courses, SNOTEL, and other snow data sites within the state by major watershed or basin. State Annual Data Summary is typically published once each year, after the first of the year. The map is inserted in a map pocket inside the back cover. Contact the SCS, state Snow Survey Program office for further information.

DATA:

Front side of the map shows hydrologic unit boundaries and snow data site locations. Reverse of the map includes sitenames, CFS site I.D. numbers, elevation, latitude and longitude, section, township, range, basin name, and site configuration (including temperature sensors if any). No actual SNOTEL temperature data is shown.

EXAMPLE:



BASE COMPILED FROM U.S.G.S. NATIONAL ATLAS 1:1,000,000
AND WYOMING HIGHWAY MAPS. ALBERS EQUAL AREA PROJECTION.

CODE:507

Keyname:Temperature -SNOTEL, current and previous water year sensor data graphics.

Source:CFS

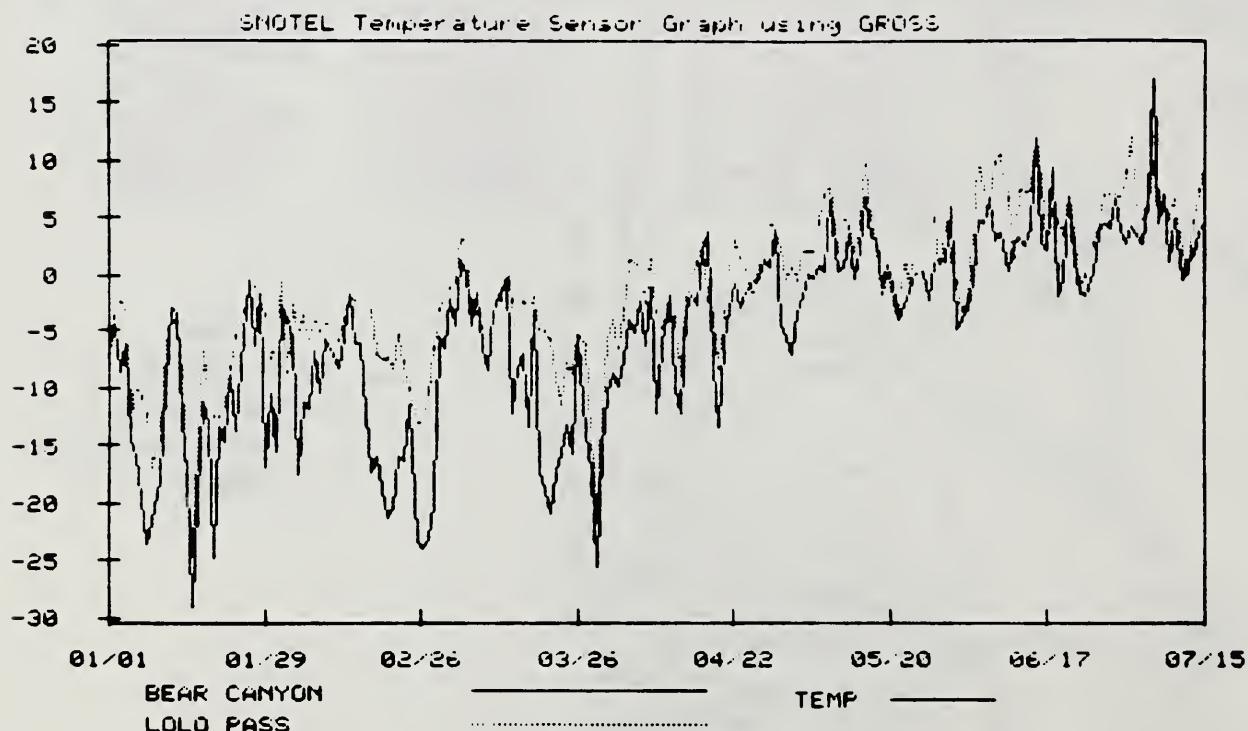
CFS menu path:CFS, DATABASE, WYSNO, GROSS

Menu options:Temperature, Pillow and Temp., tmax., tmin., tavg., Pillow, Precip. and Temp.

DESCRIPTION:

Current and previous water year, SNOTEL sensor data, graphics display for TEKTRONIX 4000 + series graphics terminals or terminals with these TEKTRONIX series, emulator software. Some of the data is not edited. All data will be provisional until at least 15 days after the poll date. Some upgraded SNOTEL sites are equipped with sensors which include previous 24 hour period, tmax., tmin., and tavg. and these may be graphed under this option.

EXAMPLE:



CODE: 508

Keyname: Temperature -SNOTEL, Historical, Archival database
Source: USDA, Fort Collins Computer Center -S2K
CFS menu path:
Menu options:

DESCRIPTION:

USDA, SCS, archival database for all (period of record) SNOTEL sensor values -one value per sensor per day. This hierarchical database provides numerous search and report formats as prescribed by the user query. For information regarding access and use of the SNOTEL archival database contact the Water Supply Forecasting Staff at the SCS, West National Technical Center, Portland, Oregon.

DATA:

TEKTRONIX REPORT

See CODE 104.

EXAMPLE:

TIMES SHOWN ARE PACIFIC TIME

NOTE: DATA MARKED "NM" IS A STRAIGHT VOLTAGE READING

		SNOW	PREC	TEMP	TMAX	TMIN	TAVG

BATEMAN ***** (WY 84)							
DATE	TIME	SNOW	PREC	TEMP	TMAX	TMIN	TAVG
831001		.0	.6	3.5	.0	.0	.0
831002		.0	.6	.5	.0	.0	.0
831003		.0	.6	-2.1	.0	.0	.0
831004		.0	.6	-2.4	.0	.0	.0
831005		.0	.6	1.2	.0	.0	.0
831006		.0	.6	.6	.0	.0	.0
831007		.0	.6	.7	.0	.0	.0
831008		.0	.6	1.1	.0	.0	.0
831009		.0	1.1	.3	.0	.0	.0
831010		.0	1.1	2.1	.0	.0	.0
831011		.0	1.1	-1.1	.0	.0	.0
831012		.0	1.1	-4.8	.0	.0	.0
831013		.0	1.1	-3.1	.0	.0	.0
831014		.0	1.2	1.2	.0	.0	.0
831015		.0	1.2	-4.2	.0	.0	.0
831016		.0	1.2	-3.7	.0	.0	.0
831017		.0	1.2	-2.4	.0	.0	.0
831018		.2	1.3	.7	.0	.0	.0
831019		.2	1.3	1.0	.0	.0	.0
831020		.2	1.3	1.5	.0	.0	.0
831106		.2	1.6	-2.6	.0	.0	.0
831107		.2	1.6	.3	.0	.0	.0
.							
.							
.							
831108		.3	1.6	-.2	.0	.0	.0

Keyname: Temperature -SNOTEL, period of record, historical

database -CFS

Source:CFS

CFS menu path:CFS, DATABASE, DBQ

Menu options:TABLE, CARDS, PRELUDE

DESCRIPTION:

 CFS based, SNOTEL, previous water years, (period of record) historical database. The user may query the operational database for SNOTEL temperature sensor values and send results to a user named file. The file may be downloaded under the CFS, UTIL menu and may used to generate graphs under the GRAPHICS menu. SNOTEL data from the historical database may be combined with data from WYSQ (current water year SNOTEL) before graphing. The TABLE format is designed for easy reading. The CARDS format provides an ASCII, tabular format for machine processing. The PRELUDE format is designed for SCS, FOCAS equipment processing.

EXAMPLE: (may be edited to fit page!)

 /cfs/cfs/data/snotelw <0 leave

Station : 07M325, BEARTOWN

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
	—	—	—	—	—	—	—	—	—	—	—	—
1	2.3	-3.1	-12.6	-14.2	-26.3	-7.7	-10.5	2.3	0.0	8.2	8.6	9.5
2	0.0	-2.9	-12.8	-20.6	-29.4	-6.9	-7.3	0.0	2.0	9.3	7.0	8.9
3	-0.9	-0.5	-13.1	-15.7	-23.1	-0.3	-3.1	3.1	3.0	9.2	7.6	5.3
4	-1.1	-2.5	-8.3	-11.2	-18.8	-15.6	-2.3	3.1	3.2	10.2	7.0	6.4
5	-0.3	-4.2	-10.0	-8.3	-20.5	-15.6	-4.8	2.9	3.4	11.4	8.4	5.8
6	-0.7	-0.5	-11.3	-6.5	-17.0	-9.1	-4.1	2.4	4.1	12.2	9.2	5.8
7	-0.6	-2.4	-3.6	-5.8	-18.8	-7.4	-3.2	2.4	6.6	12.1	9.9	4.6
8	-0.4	-3.7	-3.7	-7.0	-14.1	-7.5	-2.1	3.2	8.6	9.7	10.5	0.4
9	-0.1	-7.1	-3.8	-10.6	-9.8	-4.7	-0.2	4.0	10.1	9.1	10.0	4.2
10	-12.7	-5.4	-13.6	-9.2	-3.8	-2.6	1.9	9.8	8.1	8.9	5.0	
11	-7.6	-5.4	-13.7	-15.7	-2.7	-1.1	-1.9	7.2	9.4	7.6	4.2	
12	-3.3	-7.7	-13.1	-9.4	-3.1	0.5	-3.7	6.0	10.3	3.1	1.7	
13	-2.2	-2.0	-10.1	-15.3	-7.4	-9.2	-0.6	-4.6	6.4	9.7	6.2	0.5
14	0.1	-3.3	-10.7	-9.6	-10.0	-9.0	-1.0	-0.1	7.4	10.6	6.0	3.6
15	-5.8	-0.4	-10.5	-6.5	-7.7	-9.4	-0.3	-1.0	8.5	10.6	6.3	
16	-11.4	-5.7	-12.2	-11.6	-4.3	-5.4	0.6	2.9	9.3	8.5	7.3	2.8
17	-11.7	-6.4	-13.8	-13.9	-5.5	-6.6	0.8	1.0	8.3	8.3	8.0	4.9
18	-0.1	-7.6	-9.7	-5.5	-5.7	-7.0	-0.3	-0.9	8.0	8.6	9.4	5.1
19	-11.7	-10.6	-9.3	-5.6	-6.8	-5.8	-3.2	-1.0	7.6	8.4	5.4	1.3
20	-10.0	-12.3	-10.4	-8.3	-4.9	-7.5	-6.6	-1.0	6.4	8.9	8.5	1.6
21	-10.5	-9.1	-12.3	-7.8	-7.9	-8.0	-4.6	-1.3	9.5	8.5	7.3	-0.2
22	-0.9	-6.9	-13.5	-7.8	-9.4	-7.6	-3.6	-1.3	8.8	6.7	7.7	0.9
23	-0.1	-5.4	-11.2	-11.2	-9.3	-13.9	-7.1	0.1	9.6	6.9	9.1	-1.7
24	-9.0	-3.7	-9.8	-11.3	-13.9	-9.8	-4.7	0.8	9.9	6.9	9.7	-2.4
25	-0.3	-6.1	-9.8	-10.4	-10.2	-3.2	-1.3	2.4	8.3	5.1	9.1	0.9
26	-6.5	-12.4	-8.6	-10.0	-9.1	-2.7	-4.9	3.5	4.6	5.1	10.4	-0.1
27	-3.5	-19.3	-5.9	-9.0	-9.8	-7.9	-5.3	4.5	0.4	5.4	10.0	1.7
28	-5.7	-12.7	-4.6	-11.3	-6.2	-8.3	-0.2	4.6	4.8	9.3	2.4	
29	-5.1	-9.1	-7.1	-13.2	—	-7.9	-1.1	4.4	7.1	4.9	7.7	-0.7
30	-2.5	-14.3	-9.1	-15.2	—	-12.3	0.1	4.3	8.4	6.2	10.1	-5.2
31	-2.6	—	-19.3	—	-16.3	—	1.7	—	5.5	10.5	—	
mean	-4.8	-6.9	-9.4	-11.2	-12.2	-8.0	-2.9	1.0	6.6	8.5	8.4	2.8
var	2.3	-0.5	-3.7	-5.5	-4.3	-2.7	0.8	4.6	10.1	12.2	10.5	9.5
min	-11.7	-19.3	-13.5	-20.6	-29.4	-16.3	-10.5	-0.1	0.0	4.9	3.1	-5.2

CODE:510

Keyname:Temperature -NOAA, period of record, historical, climate data.

Source:CFS / NOAA

CFS menu path:CFS, DATABASE, (CLIM)

Menu options:TABLE, CARDS, PRELUDE

DESCRIPTION:

NOAA, daily climatic data for selected stations in the western states. Climatic data loaded into the DATABASE includes daily precipitation and temperature. The user may send queried information to a named file for downloading under the CFS, UTIL menu and may graph the data under the CFS, GRAPHICS menu. See CODE 509 for an explanation of the TABLE, CARDS, and PRELUDE options.

EXAMPLE:

/cfs/cfs/data/clim53 82 tavg

Station : 0482, BATTLE GROUND

----- Unit = degrees F

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
1	54	54	44	36	44	43	40	54	61	59	62	
2	54	51	49	37	41	46	43	54	54	60	70	
3	50	52	42	35	44	47	44	50	56	59	74	
4	49	43	43	34	39	46	43	45	57	63	60	
5	50	43	49	31	31	44	40	47	53	61	63	
6	54	48	49	20	33	40	42	55	54	66	66	
7	57	48	47	18	31	43	43	59	51	71	67	
8	53	50	44	22	36	49	42	48	54	70	65	
9	50	45	44	28	33	46	45	49	61	66	66	
10	52	47	46	29	29	53	47	48	66	60	55	
11	48	50	41	30	31	48	53	50	69	64	53	
12	42	51	39	35	44	40	49	56	61	60	55	
13	46	52	38	37	48	43	47	54	53	62	54	
14	47	50	40	40	53	43	43	55	53	54	58	
15	50	48	44	42	53	41	40	57	57	57	53	
16	51	50	45	44	53	38	39	60	61	61	56	
17	49	47	44	43	52	41	46	60	65	62	61	
18	54	45	42	41	45	45	41	51	72	65		
19	57	47	46	40	47	43	39	48	80	67		
20	54	47	44	37	54	43	47	55	73	68		
21	46	51	40	39	46	39	54	59	68	72		
22	48	50	40	37	40	43	59	59	53	69		
23	50	49	35	43	37	46	59	54	63	69		
24	47	44	37	43	37	48	47	60	68	71		
25	49	44	42	43	41	52	45	68	70	75		
26	51	45	41	46	43	52	51	56	69	71		
27	56	41	40	42	39	47	50	51	63	62		
28	57	38	39	42	41	46	53	53	61	60		
29	50	40	36	43	—	42	44	57	63	70		
30	47	40	32	45	—	44	49	59	67	61		
31	51	—	35	45	—	43	—	62	—	58	—	
mean	51	47	42	37	41	44	46	54	62	64	61	
max	57	54	49	46	54	53	59	68	80	78	74	
min	42	38	32	18	29	38	39	45	51	54	54	

CODE:511

Keyname:Temperature -CFS, DATABASE, NOAA and SNOTEL data site location information list.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, Datatype SNOT or CLIM

Menu options:LIST, FLIST, LISTBYNAME, FLISTBYNAME, LISTBYID, FLISTBYID.

DESCRIPTION:

The CFS DATABASE allows the user to assemble a query to retrieve specific site information for SNOTEL, NOAA climate, RESERVOIR, STREAMFLOW, and SNOW COURSE data. The first step in the query is to assemble a list of potential sites which fall within the user's criteria. Normally, the user may review the list of sites with the DATABASE "LIST" command. Another DATABASE option, "FLIST" allows the user to send that site information listing to a user named file which can be accessed under the CFS, UTIL menu. LISTBYID and LISTBYNAME allow the user to sort the list by CFS I.D. and alphabetically. FLISTBYID and FLISTBYNAME are identical except that they send the output to a user named file.

EXAMPLE:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	04	007	SNOT	15060203	11R06S	3427	11124	7300	BAKER BUTTE
2	04	001	SNOT	15060102	09S01S	3359	10931	9125	BALDY
3	04	001	SNOT	15060102	09R11S	3407	10951	7400	BUCK SPRING
4	04	001	SNOT	15040004	09S07S	3348	10909	8400	CORONADO TRAIL
5	04	005	SNOT	15060202	11P13S	3504	11151	7200	FRY
6	04	011	SNOT	15040004	09S11S	3339	10918	9020	HANNAGAN MEADOWS
7	04	005	SNOT	15060103	10R04S	3419	11045	7640	HEBER
8	04	001	SNOT	15060101	09S02S	3355	10927	9200	MAVERICK FORK
9	04	005	SNOT	15060202	11R03S	3456	11131	7500	MORMON MOUNTAIN
10	04	007	SNOT	15060105	11R10S	3422	11101	7930	PROMONTORY
11	04	007	SNOT	15060203	11R08S	3437	11131	6120	SUGAR LOAF
12	04	005	SNOT	15060202	12P02S	3508	11209	7180	WHITE HORSE LAKE
13	04	011	SNOT	15060101	09S18S	3345	10930	7850	WILDCAT
14	04	007	SNOT	15060103	10S01S	3349	11055	6900	WORKMAN CREEK

Keyname:Temperature -CFS, NOAA, period of record, daily climate data processing routine.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (CLIM)

Menu options:FROST

DESCRIPTION:

Frost free growing season probability routine which uses CFS, DATABASE, NOAA, daily climate station temperature data for the period of record. This routine is only available for selected climate stations in western states. Field offices use the information as part of the conservation planning effort. The user may send the output to a user named file which may be subsequently downloaded from the CFS, UTIL menu.

This table is the same frost free period table format which is published in SCS Soil Surveys.

EXAMPLE:

Station : MEDFORD EXP STATION, 5424
start yr. - 1937 end yr. - 1986

Probability	Temperature		
	24F or lower	28F or lower	32F or lower
Last freezing temperature in spring : March-June			
1 year in 10 later than--	March 29	May 1	June 1
2 year in 10 later than--	March 25	April 23	May 27
5 year in 10 later than--	March 16	April 7	May 17
First freezing temperature in fall : August-Nov.			
1 yr in 10 earlier than--	October 21	September 26	September 17
2 yr in 10 earlier than--	October 27	October 5	September 22
5 yr in 10 earlier than--	November 8	October 21	October 2

CODE:513

Keyname:Temperature -CFS, NOAA, period of record, daily climate data, temperature and precipitation summary.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ, (CLIM)

Menu options:TAPS

DESCRIPTION:

CFS, DATABASE generated, daily temperature and precipitation summary for period of record, for selected NOAA climate stations for western states. This summary is particularly useful for field office conservation planning purposes. The user may send output to a user named file for subsequent downloading under the CFS, UTIL menu.

EXAMPLE:

Station : MEDFORD EXP STATION, 5424

start yr. - 1937 end yr. - 1986

Month	Temperature				Precipitation			
	avg	avg	avg	max	min	grow'n	avg	less
January	45.8	29.2	37.5	63	10	3	3.07	1.47
February	53.0	31.2	42.1	68	15	6	2.33	1.17
March	58.2	33.0	45.6	76	19	21	2.00	1.02
April	65.4	35.9	50.6	85	26	81	1.19	0.56
May	73.5	40.9	57.2	93	29	229	1.26	0.49
June	80.7	46.5	63.6	100	33	407	0.93	0.24
July	89.7	50.1	69.9	104	38	603	0.28	0.07
August	88.1	49.4	68.7	102	39	579	0.46	0.10
September	82.3	43.5	62.9	100	27	385	0.87	0.30
October	68.2	37.5	52.8	88	23	126	1.99	0.70
November	53.3	33.6	43.5	70	17	15	2.98	1.13
December	45.6	31.1	38.4	63	14	3	3.66	1.74
Yearly :								
Average	67.0	38.5	52.7	---	---	---	---	---
Extreme	109	-8	---	107	8	---	---	---
Total	---	---	---	---	2459	21.00	11.61	27.15
								49

Growing Degree Days Threshold : 50.0 deg. F

Keyname:Temperature -Graphics -Historical, NOAA, daily temperature data graphics display.

Source:CFS

CFS menu path:CFS, DATABASE, GRAPHICS (or GSS)

Menu options:COMP, DAILY, PARTIAL

DESCRIPTION:

CFS graphics routines which plot historical, daily NOAA climate station values (precipitation and temperature). Designed for TEKTRONIX 4000 + series graphics terminals or temrinals with TEKTRONIX graphics emulation software. User develops (and names) file of temperature data in the CFS DATABASE then uses the GRAPHICS menu to graph data from the file. Screen display of graph may be saved to another file for later recall.

NOTE:

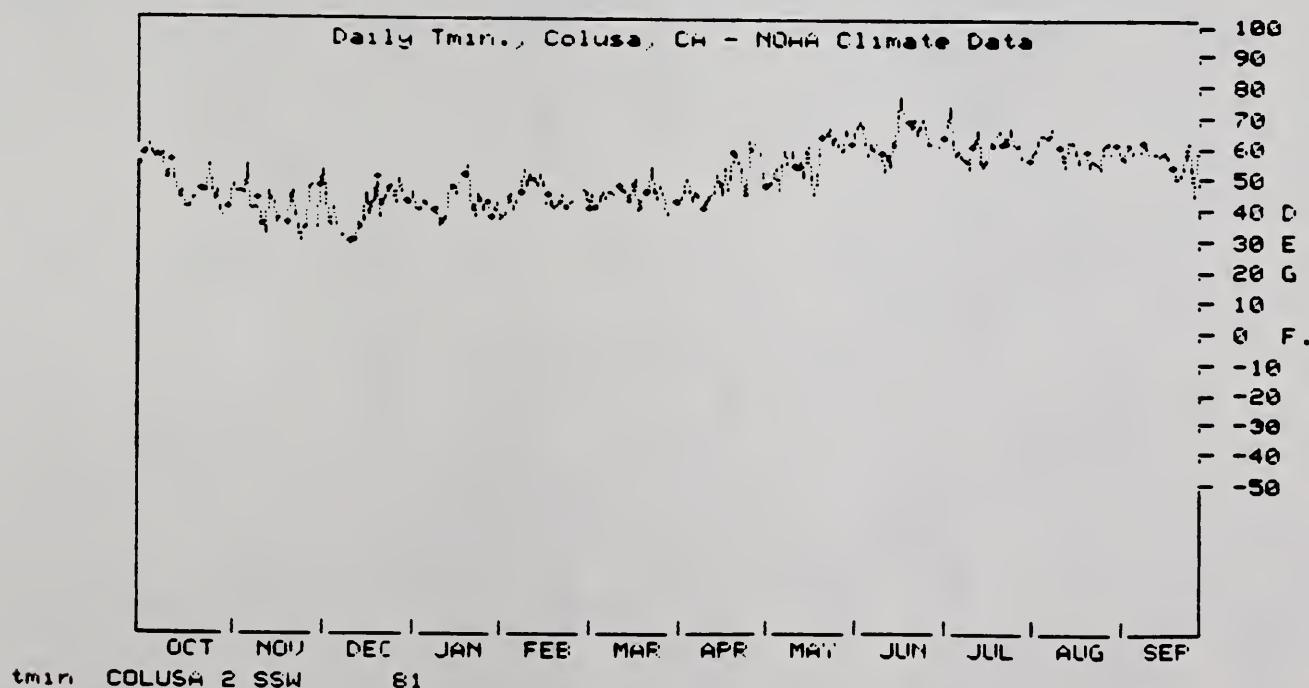
Three types of graphs:

COMP is a composite graph (bar and line graph) which requires two separate daily temperature data files. The routine plots daily temperature against time for the user selected time interval -a single year.

DAILY is a line graph of daily data for user selected years.

PARTIAL provides a line graph of daily temperature data for part of a year.

EXAMPLE:



Keyname: Temperature -Crop growth period, probability analyses for selected NOAA climate stations in the western states.

Source:CFS

CFS menu path:CFS, DATABASE, DBQ

Menu options:GROWTH

DESCRIPTION:

 Historical, daily temperature probability analyses to determine crop growth period for local climate station. This database routine is designed as a conservation planning aid for SCS field offices and agricultural land managers. The user may capture the table to a named file which can be downloaded under the CFS, UTIL menu with the PRT option.

EXAMPLE:

 Station : ALAMOSA WSO AP, 0130
 start yr. - 1948 end yr. - 1985

Probability	Daily Minimum Temperature		
	≤ days > 24F	≤ days > 28F	≤ days > 32F
9 years in 10	158	140	119
8 years in 10	168	149	127
5 years in 10	188	166	141
2 years in 10	208	183	156
1 year in 10	218	191	164

Enter CR to see this station again, otherwise anything else :





V. CENTRALIZED FORECAST SYSTEM DATABASE QUERY SYSTEM

DataBase Query Language (DBQ) allows the user to locate sites based on specific criteria, view the data associated with the site(s), write that data to a file or request analysis of the data.

A. INTRODUCTION TO DATA AND DATA SOURCES

The Operational Database (ODB) contains historical data for eight data types. Where possible, period of record is stored for each site. The final year on record may vary because the data is gathered from at least three different sources. All data is formatted into a water year period (Oct - Sept). Monthly data for the current water year is available in WYFOR (Water Year FOREcasting). SNOTEL data for the current and previous water year is in WYSNO (Water Year SNOTel). Both WYFOR and WYSNO are explained elsewhere in this manual.

Snow course (SNOW) and SNOTEL (SNOT) data is collected and stored by SCS and its cooperators. Depth of snow and snow water equivalent (inches) are measured at snow courses. SNOTEL sites record data for up to eight sensors. As a minimum, snow water equivalent, precipitation and temperature are telemetered daily. Other sensors include maximum, minimum and average temperature. During a given water year, SNOTEL data is stored in WYSNO and SNOW course data is in WYFOR. After the end of the water year, usually sometime in November, the data is loaded into ODB.

Monthly precipitation data is collected by the National Weather Service (NWS) over a nationwide network. Provisional precipitation data is stored in WYFOR, edited as the values are confirmed by NWS and loaded into ODB at the same time as SNOW data. A few PREC sites, exclusive of SNOTEL, are maintained by SCS. These are also stored in the WYFOR PREC files and updated with the NWS sites.

Climate (CLIM) stations gather precipitation and temperature data as well as many other climatological parameters. Daily values are collected by the NWS on a calendar year schedule. Tapes are purchased from NWS and the precipitation and temperature data is loaded into the database annually. The difference in time interval, calendar year vs. water year, as well as the time required to receive the tapes, cause a lag of about one year in the period of record for CLIM stations.

Monthly streamflow (STRM) and reservoir storage (RESV) are collected primarily by the United States Geological Survey (USGS), but, on some streams, by outside cooperators. All values are stored in acre-feet and scaled to fit a predefined decimal format. Provisional data is stored in WYFOR and, in cases where values have been confirmed, is uploaded at the end of the water year. In many cases, yearly streamflow values are not loaded until the USGS publishes its yearly Water Resources Data for each state. This can cause a lag of one or two years in the period of record for a site. Where practical and merited, streamflow values are corrected to reflect free natural flow by adjusting for

changes in reservoir storage and diversions upstream of the gaging station. RESV is corrected to reflect the SCS definition of active storage, which is total contents minus dead storage. A few sites store daily streamflow and reservoir records for modeling purposes under the datatypes STRD and RESD respectively. This data is downloaded from the USGS WATSTORE system and formatted for ODB.

B. SEARCHES

1. Simple Searches

The search procedure is implemented by combining command phrases to create a list (working buffer) of the sites of interest. When the user enters the database, the working buffer includes all the available sites. By searching for a site, or group of sites, those sites not matching the search criteria are eliminated. The search is a method of isolating the site(s) of interest.

All searches must begin with the command FIND (F or FIND) in the format :: FIND KEY OPTION. A KEY is one of nine (9) attributes associated with a site. They are: county, datatype, elevation, latitude, longitude, sitename, station, state, and Hydrologic Unit Code (HUC). This list may be viewed within the database by entering the word "KEYS" at the :: prompt. Commands may be entered in upper or lowercase letters or any combination thereof.

OPTIONS requires a specific value corresponding to the key. An example would be :: F DATATYPE SNOW; this would eliminate all other datatypes except SNOW from the working buffer. The options for the keys are as follows:

county - Search by FIPS state and county codes in the format XXYY e.g., Emery County, Utah requires the statement :: F COUNTY 49015
- Request by long name, i.e., :: F COUNTY EMERY. Caution is required with this option if the same county name appears in more than one state, i.e., :: F COUNTY CLARK returns sites in Washington, Idaho, and Nevada. This problem is eliminated by combining statements (see Compound Searches).

datatype - Currently, ODB maintains eight datatypes.
CLIM - NWS sites with daily precipitation and temperature records
PREC - sites with monthly precipitation data
RESD - daily reservoir storage
RESV - monthly reservoir storage
SNOW - manually measured snow courses maintained by the SCS as well as selected sites in Canada
SNOT - SCS maintained SNOTEL sites with daily telemetered data (swe, ppt, temp)
STRD - daily streamflow corrected for diversion and changes in reservoir storage

STRM - monthly streamflow corrected for diversion and changes in reservoir storage

:: F DATATYPE STRM returns all the streamflow gaging stations in ODB

elevation - Searches are conducted on 1000 foot increments between 0 and 15,000 ft. The string :: F ELEVATION 9000 will return all sites in the range 9000 to 9999 feet.

HUC - Hydrologic Unit Code. Each major river basin in the United States has been assigned an 8-digit HUC. The HUC consists of four 2-digit codes: region, subregion, accounting unit and cataloging unit. The 12 regions in ODB are:

09	Souris-Red-Rainy	15	Lower Colorado
10	Missouri	16	Great Basin
11	Arkansas-White-Red	17	Pacific Northwest
12	Texas-Gulf	18	California
13	Rio Grande	19	Alaska
14	Upper Colorado	20	Hawaii

Search on strings of 2,4,6, or 8 digits to locate the cataloging unit. Hydrologic Unit maps of the Western States or of individual states are available from the USGS.

:: F HUC 17 returns 2162 sites in the Pacific NW
:: F HUC 1706 returns 194 sites in the Lower Snake
:: F HUC 170602 returns 76 sites in the Salmon River
:: F HUC 17060210 returns 7 sites in the Little Salmon

latitude - Searches are conducted on one degree of latitude between 31 N and 68 N. :: F LATITUDE 120 returns all sites in the range 120 00' to 120 59'.

longitude - Searches are conducted on one degree of longitude between 100 and 180. :: F LONGITUDE 120 returns all sites in the range 120 00' to 120 59'

sitename - The long name associated with the site, including blanks and abbreviations; names longer than two words must be enclosed in quotation marks i.e., :: F SITENAME Boulder or :: F SITENAME "VERDE R BLW TANGLE CK, ABV HORSESHOE DAM"

state - Use the two digit FIPS code, two letter abbreviation, or full spelling. :: F STATE MONTANA = :: F STATE 30 = :: F STATE MT. Each returns all the sites in Montana.

station - The alphanumeric or numeric station number.
:: F STATION 05N02 returns TAOS CANYON

After entering a simple find command, the names of the requested sites can be viewed with the LIST command. Either "LIST" or "L" returns a list of all the requested sites to the screen. Each entry is preceded by a LIST NUMBER under the heading No., and includes the biographical information (key descriptors) unique to the site. The site list can be sorted alphabetically by name or numerically by station ID with the commands "LISTBYNAME" and "LISTBYID" respectively.

These lists can be downloaded to a file by preceding the command with an "F". FLIST, FLISTBYNAME and FLISTBYID will complete the requested sort and prompt for an output filename. The completed buffer list will be written to the file as a continuous list.

To end the session in DBQ, use any of the following commands: bye, done, end, exit, quit, or simply "q".

2. Compound Searches

Two or more FIND strings can be combined to broaden or narrow a search. Compound searches work on the principle of inclusive and exclusive conjunctors.

AND

AND is the exclusive operator. The object of commands joined by an "and" is required to be a member of all subgroups, e.g., :: F DATATYPE SNOW AND STATE ID will return all the snow courses in Idaho. However, :: F DATATYPE SNOW AND DATATYPE PREC will not return any sites because no SNOW course sites can be PREC sites. Likewise, :: F STATE MT AND STATE WY will not find any sites because no site can be in two states at the same time. An exclusive search allows you to isolate sites systematically. The following searchstring isolates all 1,986 snow courses in the Database then pulls the 329 snow courses in Montana from the larger set and finally returns the 9 sites in the Swan River basin: :: F DATATYPE SNOW AND STATE MT AND HUC 17010211. Searches can be continued on subsequent command lines. If, after "list"ing the 9 sites in the Swan, you choose to use only those 7 sites above 6000 feet, the string, AND ELEVATION 6000, can be entered at the :: prompt.

OR

OR is the inclusive conjunction. The objects of search statements joined by an "or" are grouped into a larger set. Sites meeting both criteria are only counted once. As an example, the statement :: F DATATYPE SNOW OR STATE WY will return all 1,986 snow courses in the database, including the 214 in Wyoming, as well as the remaining 544 sites of other datatypes in Wyoming. OR statements can create large subsets of the database or can be used to string together individual sites. :: F STATION 15E10 OR STATION 16E11 OR STATION 16B11 OR STATION 14G01 returns Bear Saddle, Bear Basin, Skitwish Ridge, and Deadline snow courses.

The combination of AND and OR statements provides greater flexibility in searching for groups of sites. As an example, if you want to find all snow courses and precipitation stations in Wasatch County, Utah, the command sequence :: F DATATYPE SNOW OR DATATYPE PREC AND COUNTY WASATCH returns 18 sites, 9 SNOW and 9 PREC. Although the SNOW and PREC objects can be interchanged without altering the results of the search, moving the AND COUNTY WASATCH will produce a different list. The best way to learn is to experiment a few times.

OOPS/BACKUP

Often, a search will require several steps and all the sites required will belong to one key type but to different groups of a second key type. The OOPS or BACKUP facility allows you to return to the searchstring at a previous level in a FIND sequence. As an example, lets say you were trying to locate all the CLIM stations in Mesa County, Colorado but you wanted them separated based on the three major drainages (Gunnison, Dolores and Colorado). Your first two find statements will isolate CLIM sites and Mesa COUNTY; either :: F DATATYPE CLIM AND COUNTY MESA or :: F COUNTY MESA AND DATATYPE CLIM will accomplish that. Next, you might search for those sites in the Gunnison basin by entering :: AND HUC 14020005. Now the working buffer contains only CLIM sites in the Gunnison that are also located in Mesa Co. The next group requires either a new FIND sequence just like the previous one except with a new HUC, or, by entering BACKUP or OOPS, you return to the buffer of Mesa Co. CLIM sites and can enter :: AND HUC 140100 to isolate the CLIM sites in the Colorado River basin. A second BACKUP and :: AND HUC 140300 locates the sites in the Dolores River basin.

OOPS and BACKUP can be used in the form BACKUP # or OOPS # where # is the number of strings or commands you want to skip back over. Perhaps in the previous example you wanted to supplement the daily precipitation data with monthly data. If the final searchstring was :: F COUNTY MESA AND DATATYPE CLIM AND HUC 140300 you could BACKUP 2 and be in a buffer of all sites in Mesa Co. An :: AND DATATYPE PREC would isolate the PREC sites in Mesa Co. and you could proceed with the same search scheme to locate sites within river basins.

STASH and SAVE

The previous example would not be helpful if you were trying to locate sites without a common background, for example, snow courses and SNOTEL sites in different counties. The following example finds the SNOW and SNOT sites in Granite, Deer Lodge, and Powell counties in Montana. :: F DATATYPE SNOW OR DATATYPE SNOT AND STATE MT isolates all the snow courses and Snotel sites in Montana, and :: AND COUNTY GRANITE locates the 21 sites in Granite County. :: SAVE creates a buffer called STASH to hold the Granite County sites. Use BACKUP 2 to return to the 399 Montana sites. The string :: AND COUNTY DEER LODGE finds 11 sites in that county. By entering :: OR STASH, the Deer Lodge County sites are linked to the Granite County sites. A subsequent :: SAVE adds the Deer Lodge County sites to the STASH buffer. This time, :: BACKUP 3 is required to return to the Montana sites (BACKUP 1 over the SAVE, BACKUP 1 over the OR STASH and BACKUP 1 over the AND COUNTY

DEER LODGE). To get the last sites, :: AND COUNTY POWELL OR STASH returns a total of 41 Snotel and snow courses in the 3 counties. The current working buffer now contains these 41 sites and data retrieval can be requested from the list.

SAVE and STASH are applicable to unrelated finds that cannot be joined with either AND or OR. STASH can also be used with the AND conjunction just as with any other keytype.

3. HELPFul Features

ODB maintains several HELP and helpful features within DBQ. Upon entering DBQ, the commands COMMANDS, KEYS, and HELP "keytype" are available. After the first successful FIND sequence, :: HELP is also executable. :: COMMANDS produces a list and short definition of the commands that make up DBQ Language. :: KEYS does the same for the 9 key attributes. :: HELP "keytype" provides a more detailed definition and use of the keytype requested as the object, i.e., :: HELP LONGITUDE. The generic :: HELP command provides a description of the command strings.

Three other helpful features are HISTORY, or HIST, SH and 'L. :: HISTORY will return a list of the commands beginning with the last FIND sequence and including nonsearch commands such as SAVE and LIST. Commands are erased from HISTorical listings if they are BACKUPed or OOPSed over. :: SH, for SHow or Short History, returns a list of search commands executed since the last find command. The commands are erased by OOPS but not until a new sequence is initiated. :: CCL is a combination of the two commands are erased when OOPSed over but nonsearch commands are not included.

The following is a find sequence followed by the HIST, SH and CCL commands:

```
:: f datatype snow and state id and huc 17060301
    1,986 stations found
    243 stations found
    HUC : Upper Selway
    1 stations found

:: save
    record saved in stash

:: backup 2
    1,986 stations found
    243 stations found
:: and huc 17060302 or stash
    1 stations found
    2 stations found

:: save
```

```
record saved in stash  
:: backup 3  
    1,986 stations found  
    243 stations found  
:: sh  
    f      datatype          snow  
    and   state            id  
    and   huc             17060302  
    or    stash  
  
:: hist  
    f      datatype          snow  
    and   state            id  
    sh  
  
:: ccl  
    f      datatype          snow  
    and   state            id  
  
::
```

4. Tutorial

A tutorial diskette is available to review search techniques in DBQ. The diskette can be requested from the SCS Snow Survey Office in your state.

C. DATA RETRIEVAL

Users are ultimately more interested in the data associated with a site than its biographical information. Searches are undertaken with a specific objective and, therefore, the user usually has some knowledge of site attributes relative to location and/or datatype. Data can be viewed while in ODB or can be written to file for outside use. Four formats are available for data retrieval.

1. Data Formats

Data can be viewed or retrieved in one of five formats: TABLE, CARD, TABLE132, SNOSUM or PRELUDE (not available at this printing). Each has its particular uses and features.

CARD

CARD files contain data in a simplified, one year or day per record format. As such, it is the preferred format for automated data transfer. Each file is preceded by a five line header.

Line 1 : */odb/ST/++++## where ST is the 2 letter abbreviation for the state (e.g, co for Colorado), ++++ is the datatype, and ## is the state FIPS

Line 2 : blank

Line 3 : Station : #####XXXX, XXXXXXXX where ##### is the station ID number, XXXXXXXX is the sitename

Line 4 : -----

Line 5 : blank

At the end of the data, is a line of 10 dashes. No blank lines are inserted between sites. For monthly datatypes, the data begins on line 6. The data itself is formatted differently for each datatype.

CLIM data can be formatted in both TK and WATSTOR format. WATSTOR writes one sensor per card file. The sixth line contains a "2" in the first column and the station siteid in columns 3-6. The data begins on the next line. The first column contains a "3" and columns 3-6 contain the siteid. Columns 7-16 are blank, columns 18-20 contain the year, columns 21-22 contain the month, column 23 is blank and column 24 contains the numbers 1-4 representing the card number. Columns 25-27 are blank and the data begins in column 28. Each month is recorded on four cards with eight (8) days per card. The data, beginning in column 28, is formatted as (F4.2,3X). The example below is October 25 - November 16, 1984 (WY 85).

3 1022	198410 2	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00
3 1022	198411 1	0.00	0.21	0.00	0.00	0.00	0.05	0.00	0.30
3 1022	198411 2	0.00	0.34	0.06	0.00	0.21	0.00	0.00	0.00

Again, the last record is ten dashes (-----).

TK format has become a method for machine transfer of data. All sensors are recorded in one file, one day per record. The first five lines of the record are as the other formats. Line 6 contains the sitename, line 7 underlines the sitename and line 8 contains the sensor types as column headings. Data begins on line 9: columns 1-2 contain the year, columns 3-4 contain the data, columns 7-14 are blank and the data begins in column 15. The data is in as many fields as there are sensors, formatted (F4.1,4X). The example below is lines 6-9 from the BOISE WSFO AP station. The data is October 1-3, 1983, the first three days of WY 84.

BOISE WSFO AP					

DATE	prec	tmax	tmin	tavg	tave
8310 1	0.0	62.0	44.0	53.0	53.0
8310 2	0.0	61.0	47.0	54.0	54.0
8310 3	0.0	65.0	41.0	53.0	53.0

The last record is ten dashes (-----).

PRECipitation data is presented with one year per record. The months are recorded in a water year format. The data begins on line 6. Columns 1-2 contain the state FIPS code, columns 3-6 contain the siteid, columns 7-8 contain the year. The data begin

in column 22 and is formatted as (F4.2,2X). The following data is from water years 1984-86, the first value is from October 1983.

16S33084	180	700	580	100	310	310	310	280	320	270	100	70
16S33085	170	690	320	30	280	230	90	180	40	160	20	410
16S33086	230	300	230	520	970	250	280	160	70	60	90	330

RESV and STRM are formatted identically. Columns 1-8 contain the siteid, columns 9-10 contain the year, column 11 contains the scale factor. The data begins in column 22 and is formatted (F4.0,X), right justified. Space constraints allow only four columns of coding therefore, values are stored up to four significant digits and assigned a scale factor to assist in reconversion to the full value. Scale factors and an example of coding follows.

CODE	MAGNITUDE
0	= * 100
1	= * 1000
2	= * 10000
3	= * 100000

VOLUME FLOW	SCALE	CODING
35620	0	3562
est 123800	1	E1238
2384000	2	2384

The following example is from the N. Fork Payette River at Cascade, Id, Water Years 1983-85.

13245000831	422	326	386	375	350	863	1390	1980	2630	890	245	290
13245000841	286	576	464	297	316	441	1004	2091	2914	721	188	291
13245000851	273	347	177	191	185	224	978	1778	839	16	31	372

SNOW course data begins on line 6. Columns 1-2 contain the state FIPS, columns 3-8 contain the siteid, column 9 is blank. Column 10 contains the card type: 1 denotes a first of month measurement, 2 denotes a midmonth measurement, 3 denotes a special measurement. Columns 11-13 contain the site elevation to the nearest 10 feet. Columns 14-15 contain the year and columns 16-17 contain the basin.

BASIN CODES		
06	Upper Missouri	12 Upper Columbia (above Snake)
07	Arkansas	13 Snake
08	Rio Grande	14 Lower Columbia (below Snake)
09	Colorado	15 Alaska
10	Great Basin	17 Saskatchewan
11	California and Pacific Coastal	

The data begins in column 21. Each record contains up to six (6) months of data. Each month has a date, depth and water equivalent. Columns 21-23 contain the date: col. 21 is the month (1-6 = Jan-Jun, 0 = Oct, J = Nov, K = Dec), col. 22-23 is the date. Columns 24-26 contain the snow depth in inches and columns

27-30 contain the snow water equivalent (swe) to the nearest tenth of an inch. Estimated data will have the abbreviation EST in the date columns (21-23) and will not have a snow depth recorded. The following example is from Baker Butte snow course in Arizona. The records show first of month measurements from Water Years 1984-86 and mid-month measurements from WY 1966-67.

0411R06	17308409	K28	6	21130	5	15228	0	0328	0	0
0411R06	17308509	K27	18	59131	38	101227	27	105328	7	26
0411R06	17308609	103	1	01130	0	00227	0	00331	0	00
0411R06	27306609	111027009421404001263140230093								
0411R06	27306709	113004001021400300093140000000								

SNOTEL data is available in TK format for CARD formatted data. The headings and columns are identical to that for CLIM site, TK format. The example below is lines 6-12 (Oct 1-3) from GALENA SNOTEL, WY 1986.

GALENA

DATE	pill	prec
8510 1	0.0	0.0
8510 2	0.0	0.0
8510 3	0.0	0.0

SNOSUM

SNOSUM formats SNOTEL data into a monthly table similar to that from a SNOW datatype. That is, daily records are summarized to monthly values so that the period of record is written to the file. WATSTOR and TK options are also available. The following examples have limited explanations because the line by line formats are explained in the previous sections.

This is an incomplete table of pillow data from a SNOTEL site. It does show the cardtype transition point. The summary tables for 25-year averages are not included however; the period of record averages are. Footnotes are listed after the 10-dash line.

```
/afs/adb/1d/snot16

Station : 14P01S, GALENA
-----
Unit = inches
year/   January      February       March        April        May         June
card date dep  swe  date dep  swe  date dep  swe  date dep  swe  date dep  swe
-----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----  -----
85-1 1/01    11.4 2/01    11.7 3/01    14.7 4/01    16.8 5/01    12.5 6/01    0.0
86-1 1/01    6.5 2/01    11.4 3/01    21.1 4/01    23.1 5/01    20.1 6/01    4.5
83-2 1/15    13.3 2/15    17.6 3/15    25.3 4/15    27.5 5/15    -99.9 6/15    0.0
84-2 1/15    2/15     13.4 3/15    16.8 4/15    20.3 5/15    16.3 6/15    0.0
-----
```

NOTES: 0/dd - October, 3/dd - November, R/dd - December, E/ST - estimate

The following is the PREC TABLE for the period of record from the SNOTEL site. It is identical to the PREC TABLE format.

/cfs/odb/id/snot16

Station : 14PO1S, GALENA
----- Unit = inches

yr	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	SUM
83	3.20	3.60	6.30	2.60	4.90	5.70	1.40	1.90	1.50	1.90	3.00	1.10	37.10
84	1.80	7.00	5.80	1.00	3.10	3.10	3.00	2.90			1.00	0.70	*****
85	1.70	6.90	3.20	0.30	2.80	2.20	1.00	1.70	0.50	1.50	0.30	4.10	26.20
86	2.30	3.00	2.30	5.20	9.70	2.50	2.80	1.60	0.70	0.60	0.90	3.30	34.90

all

years

ave	2.25	5.13	4.40	2.28	5.13	3.38	2.05	2.03	0.90	1.33	1.30	2.30	32.73
yrs (4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(3)	(3)	(4)	(4)	(3)

1961-1985 average :

2.23	5.83	5.10	1.30	3.60	3.67	1.80	2.17	1.00	1.70	1.43	1.97	31.65
yrs (3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(2)	(2)	(3)	(3)	(2)

Note : Units are in inches.

SNOSUM will also format SNOTEL data into CLIM-style CARD formats. CARD and WATSTOR options are both available. The data is converted to daily (incremental) values and written to the proper day. These options are available for all sensor types.

The following example is CARD format for pillow data:

/cfs/odb/id/snousum16 83 pill

Station : 14PO1S, GALENA
----- Unit = inches

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
1	0.0	0.1	0.1	0.0	0.0	1.5	0.2	-0.3	-0.8	0.0	0.0	0.0
28	0.2	0.3	0.0	0.0	0.3	0.1	-0.4	-0.6	0.0	0.0	0.0	0.0
29	0.1	0.3	0.0	0.1	---	0.8	0.0	-0.7	0.0	0.0	0.0	0.0
30	0.1	0.1	0.0	0.0	---	0.6	0.0	-1.2	0.0	0.0	0.0	0.0
31	0.0	---	0.0	0.1	---	0.1	---	-0.8	---	0.0	0.0	---
mean	0.0	0.1	0.2	0.1	0.2	0.2	-0.0	-0.4	-0.4	0.0	0.0	0.0
max	0.5	1.2		0.6	1.0				0.0	0.0	0.0	99.9
min	-0.1	0.0		0.0	0.0				-1.3	0.0	0.0	-99.9

The following is WATSTORE format for the same site:

* /cfs/odb/id/snot16 1983 pill

Station : 14PO1S, GALENA

2	14PO1S											
3	14PO1S	198210 1	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.10	0.00	
3	14PO1S	198210 2	-0.10	-0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	14PO1S	198210 3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

TABLE

TABLE format presents the data in a formal table. Summary statistics are presented for period of record, 25-year averages and, for PREC data only, yearly totals. TABLE is the format used to interact with the GRAPHICS programs in the Database menu. As with CARDS, the TABLES differ slightly with each datatype.

CLIM tables have a 5-line header.

- Line 1 : */cfs/cfs/data/++++## yr type where ++++ is the datatype and ## is the state FIPS, 2 blanks, yr is the Water Year, 2 blanks, type is the sensor type.
- Line 2 : blank
- Line 3 : Station : ####, XXXXXXXX where #### is the station ID number, XXXXXXXX is the sitename
- Line 4 : ----- Unit = inches
- Line 5 : blank

Lines 6 and 7 and columns 1-3 contain the headers for the table. Missing data or days without data are blank, days that don't exist are marked with "----" (i.e., 30 Feb). Summary statistics are included on three lines after the data table. The file ends with 10 dashes. No blank lines are inserted between the dashes and the next site table in the file. The following example is an abbreviated table of the precipitation sensor from a CLIMate site in Idaho.

```
/cfs/odb/id/clim16 85 prec
```

```
Station : 1408, CAMBRIDGE
----- Unit = inches
```

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
---	---	---	---	---	---	---	---	---	---	---	---	---
1	0.00	0.00	0.00	0.00	0.00	0.19	0.00	0.00	0.23	0.00	0.30	0.00
2	0.00	0.37	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.03	0.24
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	!!!!!!!!!!!!!!					DAYS 4 - 27		!!!!!!!!!!!!!!				
28	0.23	0.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
29	0.30	0.00	1.03	0.00	---	0.00	0.00	0.55	0.00	0.00	0.00	0.00
30	0.00	0.74	0.00	0.00	---	0.00	0.00	0.22	0.00	0.07	0.00	0.00
31	0.00	---	0.00	0.00	---	0.08	---	0.00	---	0.22	0.00	---
total	1.61	5.50	2.86	0.41	1.85	1.65	0.37	1.22	0.44	0.29	0.37	3.06
max	0.82	0.95	1.03	0.33	0.82	0.42	0.26	0.55	0.23	0.22	0.30	0.95
min	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

PREC tables also contain a 5-line header. The first line contains the datafile location and lines 2-5 are the same as those for CLIM tables. Lines 6-7 and columns 1-2 contain the headers for the table and columns 75-80 contain the yearly total. Monthly means are computed in a table after the data table. Means are computed for period of record and for the 25-year average. The averages tables are followed by a line with 10 dashes and a separate line with a footnote. No blank lines are inserted

between site records. The following example is a partial record from a PREC station in Wyoming.

/cfs/cfs/data/prec56

Station : 7235, PINE BLUFFS
----- Unit = inches

yr	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep	SUM
--	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	---
					!!!!!!	YEARS	1961	-	1982	!!!!!!			
83	1.08	0.86	0.56	0.02	0.03	2.47	2.32	4.16	4.04	5.17	3.68	0.46	24.85
84	0.33	1.00	0.30	0.37	0.47	1.11	2.98	0.92	3.04	3.02	1.25	1.08	15.87
85	1.64	0.10	0.53	0.44	0.00	0.26	0.86	0.90	1.24	1.80	0.55	2.45	10.77
86	0.80	0.94	0.94	0.17	0.42	0.34	3.09	1.17	1.17			*****	

all
years
ave 0.75 0.57 0.39 0.45 0.27 1.20 1.60 2.54 2.83 2.65 1.92 1.27 16.51
yrs (26) (26) (26) (26) (26) (26) (26) (26) (26) (25) (25) (25) (25) (25)

1961-1985 average :
0.75 0.56 0.37 0.46 0.26 1.24 1.54 2.59 2.89 2.65 1.92 1.27 16.51
yrs (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25)

Note : Units are in inches.

RESV and STRM site TABLES are identical. Lines 1-5 are the same as those for PREC TABLES. Line 6 writes the scale factor. Lines 7-8 and columns 1-4 are the headers for the table. The data is written to four significant digits across the row for each year and in a water year format. Summary statistics for the period of record and 25-year record are produced separate tables below the raw data. A line of 10 dashes follows the tables and a footnote line ends the file. The following example is a partial record from a reservoir in Idaho.

/cfs/odb/id/resv16

Station : 13244500, CASCADE
----- Unit = acre-ft

Scale = 100
year oct nov dec jan feb mar apr may jun jul aug sep

year	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
					!!!!!!	YEARS	1948	-	1981	!!!!!!		
82	4053	4434	4941	5116	4873	4055	3709	5120	7104	6806	6451	5547
83	5388	5336	4830	4276	4379	4552	4349	5427	6770	6840	6193	5631
84	5107	5118	4891	4496	4658	4847	4599	5687	6950	6523	5448	4595
85	4198	4423	4523	4427	4452	4554	5367	6581	6920	6090	4940	4170

all
years
ave 3543 3592 3595 3552 3385 3268 3639 4895 5949 5469 4611 3802
years (36) (36) (36) (36) (37) (37) (37) (38) (38) (38) (37) (37)

1961-1985 average :
4146 4210 4195 4094 3939 3776 4116 5487 6701 6261 5327 4461
years (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25) (25)

Note : These are End of Month readings. Units in acre feet.

SNOW TABLES differ somewhat from the other monthly datatype TABLES. Lines 1-3 are the same as the other datatypes, line 4 is 8 dashes and line 5 records the units. Lines 6-8 and columns 1-4 are the table headers. Snow measurements are usually taken only 6 months of the year but two readings are recorded on each date: snow depth and snow water equivalent (swe). Line 6 header lists the months and lines 7-8 the date, dep, swe headers and underlines. Columns 1-2 are a two digit year record, column 3 a dash (-), and column 4 a cardtype record (1=first of month, 2=mid-month, 3=special measurements). Estimates will be noted with an E/ST. Records are written in 5-year blocks separated by blank lines. All first of month measurements are recorded before midmonths and finally special records. Summary tables are computed at the end of the data records. These tables are separated into first of month and midmonth tables and contain period of record and 25-year averages. A line of 10 dashes follows the tables and footnotes are written on the next line. The following sample is an incomplete table from a snow course in Arizona. The basic 5-year structure is maintained and the transitions to cardtypes 2 and 3 are included.

/cfs/odb/az/snow04

Station : 11R06, BAKER BUTTE

Unit = inches

year/ card	date	January		February		March		April		May		June	
		dep	swe	date	dep	swe	date	dep	swe	date	dep	swe	
!!!!!! YEARS 1966-1978 !!!!!													
79-1	1/04	008	2.9	1/31	041	11.1	2/28	037	13.8	3/30	035	15.1	
80-1	1/02	007	1.9	1/31	024	9.4	2/27	031	12.6	3/31	033	18.4	
81-1	R/30	000	0.0	1/29	001	0.2	2/26	003	0.9	3/30	002	0.7	
82-1	R/29	002	0.9	1/27	019	6.0	2/25	022	7.9	4/01	009	3.6	
83-1	R/29	17	5.6	1/27	15	5.5	2/28	28	10.6	3/30	36	18.8	
84-1	R/28	6	2.1	1/30	5	1.5	2/28	0	0.0	3/28	0	0.0	
85-1	R/27	18	5.9	1/31	38	10.1	2/27	27	10.5	3/28	7	2.6	
86-1	1/03	1	0.1	1/30	0	0.0	2/27	0	0.0	3/31	0	0.0	
66-2	1/11	027	9.4	2/14	040	12.6	3/14	023	9.3				
67-2	1/13	004	1.0	2/14	003	0.9	3/14	000	0.0				
68-2	1/14	044	15.6	2/13	046	18.8	3/11	043	17.7				
69-2	1/13	014	4.1	2/14	016	5.9	3/14	043	11.8				
!!!!!! YEARS 1970-1984 !!!!!													
85-2	1/14	25	7.5	2/14	1	0.5	3/14	16	6.4				
86-2	1/14	0	0.0	2/13	10	1.6	3/13	10	1.5				
71-3										K/23	021	3.9	
72-3										K/16	015	3.1	
73-3			J/14	9	1.8					K/14	022	5.9	
74-3							K/04	008	2.1				
75-3										K/12	006	1.3	
76-3										K/11	008	2.5	
77-3										K/10	001	0.1	
79-3										K/12	008	1.8	
!!!!!! USUALLY A PAGEBREAK !!!!!													

FIRST OF MONTH MEASUREMENTS

average depth and swe :

years	11	2.9	18	5.7	18	6.7	14	5.3	28	12.1	
1961-1985 average :	19	19	21	21	21	21	21	21	1	1	0
years	12	3.0	18	5.9	19	7.1	14	5.5	28	12.1	
	18	18	20	20	20	20	20	20	1	1	0

MID-MONTH MEASUREMENTS

!!!!!! TABLE DELETED !!!!!

SPECIAL MEASUREMENTS

!!!!!! TABLE DELETED !!!!!

NOTES: 0/dd - October, J/dd - November, R/dd - December, E/ST - estimate

SNOTEL TABLES are set up identically to CLIM tables. The first line contains the datafile location, year and sensor type. Lines 2-5 complete the header and lines 6-7 contain the table headers. Columns 1-3 contain the date numbers.

/cfs/odb/wy/snot56 86 pill

Station : 07E04S, BATTLE MOUNTAIN

day	oct	nov	dec	jan	feb	mar	apr	may	jun	jul	aug	sep
1	---	---	---	---	---	---	---	---	---	---	---	---
2	0.0	4.4	6.0	7.6	11.1	9.2	0.0	0.0	0.0	0.0	0.0	0.0
29	0.0	3.8	6.0	7.6	---	10.5	0.5	0.0	0.0	0.0	0.0	0.3
30	0.0	4.3	6.0	7.6	---	10.2	0.0	0.0	0.0	0.0	0.0	0.0
31	0.0	---	6.0	7.6	---	9.8	---	0.0	---	0.0	0.0	---
mean	0.0	1.3	5.9	6.9	9.3	11.1	5.1	0.0	0.0	0.0	0.0	0.0
max	0.0	4.3	6.3	7.6	11.1	11.9	9.2	0.0	0.0	0.0	0.0	0.3
min	0.0	0.0	4.4	6.0	7.6	9.8	0.0	0.0	0.0	0.0	0.0	0.0

TABLE132

TABLE132 provides an archival format for monthly datatypes. It is similar to SUMMARY from the MDMS system. Eight lines of biographical information are printed in the heading and the data follows in five year blocks under headings for each month. Snow course tables display midmonth and special measurement data in separate sections, with their own averages summaries. Period of record and 25-year averages are computed and printed at the end of the data table. Each site is separated from the next with a page break. The example below is the heading and first three years of a snow course and the summary table that follows the first-of-month data.

Station Name : BARER BUTTE

ID Number : 11R06
 Datatype : SNOW
 Elevation : 7300 Ft.
 Latitude : 34 Deg. 27 Min.
 Longitude : 111 Deg. 24 Min.
 NUC #, Name : 15060203, Lower Verde
 County : Oila, Arizona

Year	January 1			February 1			March 1			April 1			May 1			June 1		
	Date	Depth	SWF	Date	Depth	SWF	Date	Depth	SWF	Date	Depth	SWF	Date	Depth	SWF	Date	Depth	SWF
66	12/30	007	.9	1/25	033	10.1	2/26	038	10.7	3/28	009	3.7	4/28	000	0.0	5/28	000	0.0
67	1/30	006	2.0	2/27	0	0.0	3/31	2	0.6	4/30	022	11.8	5/30	022	11.8	6/30	000	0.0
68	1/02	019	0.8	1/29	053	19.1	2/28	037	17.2	3/30	022	11.8	4/30	022	11.8	5/30	000	0.0

FIRST OF MONTH MEASUREMENTS

Average depth and SWF : 11 2.9

years	19	19	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21
years	19	19	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21

1961-1985 arithmetic average :

years	18	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
years	18	18	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

2. View Data/Write to File

DBQ allows the user to view data for a site while in ODB or to write the data to a file for use outside the database. Any number of sites and any combination of datatypes can be written to file. However, data can be written in only one format at a time. The steps are as follows, and will be explained in greater detail.

- a. Locate desired sites using search commands (Section II)
- b. LIST sites
- c. Request data format
- d. Choose sites of interest
- e1). Write all chosen sites to file without viewing data
- 2). Write data to individual files
- 3). View data without writing to file
- 4). Append sites to an existing file

a. Locate sites - review Section II - SEARCHES

b. LIST sites - also in Section I

The commands LIST, or L, returns a list of all the sites located from a sequence of searchstrings. The listing includes all the key attributes, plus a List Number (under the heading No.). This number is used to refer to the site for viewing data or writing to file. The searchstring :: F HUC 17070103, followed by the command :: L, returns the following list:

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	41	059	CLIM	17070103	3847	4549	11917	620	HERMISTON 2 S
2	41	059	CLIM	17070103	5396	4530	11824	4050	MEACHAM AMOS, OR
3	41	059	CLIM	17070103	6546	4541	11851	1492	PENDLETON WSO, OR
4	41	059	CLIM	17070103	6634	4529	11849	1720	PILOT ROCK 1 SE, ORE.
5	41	059	PREC	17070103	5396	4530	11824	4050	MEACHAM AMOS, OR
6	41	059	PREC	17070103	6546	4541	11851	1492	PENDLETON WSO, OR
7	41	059	PREC	17070103	6634	4529	11849	1720	PILOT ROCK 1 SE, ORE.
8	41	059	RESV	17070103	14019151	4551	11910	0000	COLD SPRINGS
9	41	059	RESV	17070103	14023000	4536	11847	1240	MCKAY
10	41	059	SNOT	17070103	18D20S	4522	11827	4580	BOWMAN SPRINGS
11	41	059	SNOT	17070103	18D04S	4533	11827	3925	EMIGRANT SPRINGS
12	41	059	SNOT	17070103	18D19S	4541	11806	4980	HIGH RIDGE
13	41	059	SNOT	17070103	18D06S	4517	11851	5050	LUCKY STRIKE
14	41	059	SNOW	17070103	18D04	4533	11827	3930	EMIGRANT SPRINGS (REV)
15	41	059	SNOW	17070103	18D06	4517	11851	5050	LUCKY STRIKE
16	41	059	SNOW	17070103	18D05	4530	11825	4300	MEACHAM
17	41	049	STRM	17070103	14032000	4532	11918		BUTTER CREEK NR PINE CITY

More (CR or Y if yes) ?

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
18	41	059	STRM	17070103	14022500	4532	11846		MC KAY NR PILOT ROCK
19	41	059	STRM	17070103	14021000	4540	11847		UMATILLA RIVER AT PENDLETON
20	41	059	STRM	17070103	14020000	4543	11819		UMATILLA RIVER NR GIBBON

c. Request data format

A data format is requested by entering the acronym for that format at the :: prompt. :: CARD writes all the sites in card format, : TABLE132 writes all the sites into TABLE132 format, similarly for TABLE and SNOSUM. Site data can be viewed or written in only one format at a time. However, files may be reopened to append data, and at that time a different format can be requested. This is explained in step 5d.

d. Choose sites of interest

Entering any of these commands returns the string:

List Number (from listing -- CR to leave)
:

The : prompt is requesting the list number assigned to each site in the search buffer. List numbers can be entered in several formats. Hyphens denote a sequence of sites, e.g., :3-6 will return the third, fourth, fifth and sixth sites from the list above (PENDLETON WSO, OR(CLIM), PILOT ROCK 1 SE, ORE., MEACHAM AMOS, OR, and PENDLETON WSO, OR (PREC)); commas to request separate sites, e.g., :2,9,15 will return the second, ninth and fifteenth sites (MEACHAM AMOS, OR, MCKAY, and LUCKY STRIKE(SNOW)); or with the word :ALL to return all the sites in the buffer. Any of the quit strings (q, bye, end, exit, done) can be used as a response if no sites are desired (i.e., you chose the wrong data format). Even if only one site is "found", a list number must be entered; in this case it will be the number 1.

e1). Write all chosen sites to file without viewing data

The sites requested by list number can be written to file without viewing the data. Entering list numbers or the word ALL returns the following string:

Enter a file name to APPEND ALL selected tables to disk.
Type carriage return if you do not want this option.
:

Entering a filename will cause the data for the requested sites to be written directly to that file. The file need not exist prior to the request. As the data is written to disk, a message is written to the screen to verify output. When CLIM or SNOT sites are requested, the user will be asked to specify sensor type and year for each site. The following example is a request for monthly data where period of record is automatically downloaded to a file called SNOW.OUT.

List Number (from listing — CR to leave)
: 14-16

Enter a file name to APPEND ALL selected tables to disk.
Type carriage return if you do not want this option.
: SNOW.OUT

Output to file completed for station 18D04

Output to file completed for station 18D06

Output to file completed for station 18D05

The next example is for 2 CLIMate stations - it includes the responses for datatype and water year in capital letters. The data is written to a file called CLIM.OUT.

List Number (from listing -- CR to leave)
: 1-2

Enter a file name to APPEND ALL selected tables to disk.
Type carriage return if you do not want this option.
: CLIM.OUT

CR for list, and q, bye, quit, or done to leave
*** Type abort to leave the system ***

Station : 3847, HERMISTON 2 S

Datatype (prec, tmax, tmin, tavg) : PREC

water year (CR for list) : !!!THIS IS OPTIONAL TO USER-Q WILL BYPASS!!!

year(s) available :

1928, 1929, 1930, 1931, 1932, 1933, 1934, 1935, 1936, 1937,
1938, 1939, 1940, 1941, 1942, 1943, 1944, 1945, 1946,
1947, 1948, 1949, 1950, 1951, 1952, 1953, 1954, 1955,
1956, 1957, 1958, 1959, 1960, 1961, 1962, 1963, 1964,
1965, 1966, 1967, 1968, 1969, 1970, 1971, 1972, 1973,
1974, 1975, 1976, 1977, 1978, 1979, 1980, 1981, 1982,
1983, 1984, 1985, 1986,

enter q, done, or bye to leave

water year (CR for list) : 1985

Opening clim.out for appending

Output to file completed for station 3847

water year (CR for list) : Q

CR for list, and q, bye, quit, or done to leave
*** Type abort to leave the system ***

Station : 3847, HERMISTON 2 S

Datatype (prec, tmax, tmin, tavg) : TMAX

water year (CR for list) : 1985

Opening clim.out for appending

Output to file completed for station 3847

water year (CR for list) : Q

CR for list, and q, bye, quit, or done to leave
*** Type abort to leave the system ***

Station : 3847, HERMISTON 2 S

Datatype (prec, tmax, tmin, tavg) : Q

CR for list, and q, bye, quit, or done to leave
*** Type abort to leave the system ***

Station : 5396, MEACHAM AMOS, OR

The queries will continue for this station as they did for the previous one.

e2). Write data to individual files

Some uses may require each site in a separate file or parts of the list divided into two or more files. By responding to the APPEND ALL option with a carriage return, each site in the list is presented separately for viewing and/or writing to file. After the station is listed, DBQ asks for a filename. Be aware that ODB will write over an file if given the name of an existing file. To add station records to an existing file, precede the filename with an "a " (a, space). To skip over a site, respond to the request for a filename with a "q". Whereas APPEND ALL creates a file with all the sites in it, use of "q" and "a " allows the user to group records into files or skip records entirely. The options can be combined with the screen view capability as described in the next step.

e3). View data without writing to file

Site data can be viewed within the database without writing to file. This is accomplished by entering a carriage return (RETURN) at the APPEND ALL option and a second carriage return at the request for filename with the individual site. The data will be written to the screen in the format requested. The user is then given the option of writing that data to a file before proceeding. A "q" at this point will advance to the next site if more than one site was Listed, or will return the :: prompt for the next command request. This allows the user to review the data before deciding whether to download to file. The reverse process is also true; a site's data may be written to file and then viewed at the terminal. When proceeding through the sites individually, a second "chance" is given to view or write to file if one of those options is chosen the first time.

e4). Append sites to an existing file

See 5a-c for review of "a " option when writing to file. This option allows the user to write different data formats to a single file as well as adding sites to a file at a later time.

Review the following example. User entries are in capitals. Notes to user that will not be in the database are prefaced with !!!. The List Numbers refer to the listing of sites from step 2.

:: CARD

List Number (from listing -- CR to leave)
: 14-16

Enter a file name to APPEND ALL selected tables to disk.
Type carriage return if you do not want this option.

: !!!Enter RETURN to view the sites individually!!!

*** Type bye, done, q, or quit to leave the following loop ***

Precede a file name with append, or 'a' for appending mode
with blanks as separators between that and the file name

Station : 18D04, EMIGRANT SPRINGS (REV)

Enter a file name if output is to disk - CR if output is to terminal
: EMIGRANT !!!Requests it to write to file EMIGRANT!!!

Output to file completed for station 18D04

Station : 18D04, EMIGRANT SPRINGS (REV)

Enter a file name if output is to disk - CR if output is to terminal

: Q !!!Proceeds to next site queued in the list!!!
!!!A carriage return would have printed the data to screen!!!

*** Type bye, done, q, or quit to leave the following loop ***

Precede a file name with append, or 'a' for appending mode
with blanks as separators between that and the file name

Station : 18D06, LUCKY STRIKE

Enter a file name if output is to disk - CR if output is to terminal
: !!!RETURN brings the data for Lucky Strike to screen!!!

Station : 18D06, LUCKY STRIKE

4118D06	15053914	130028006030105201453310340139
4118D06	15054014	127016003422703000833280190069
4118D06	15054114	129030008322603500973270230075
4118D06	15054214	128029006322604401183280400135
4118D06	15054314	126048013522304301303290400122
4118D06	15054414	128021004522503800823250320095
4118D06	15054514	127024006022703801003240430132
4118D06	15054614	128041010422804701463260480164
4118D06	15054714	128030008222402800993270310100
4118D06	15054814	30204101163270510153
4118D06	15054914	127040011222405801773280500173
4118D06	15055014	126041010922404501483280550183
4118D06	15055114	130036010022704001253290480162
4118D06	15055214	131039010622904601343280400136
4118D06	15055314	129032010530205101483300570195
4118D06	15055414	128036008922603200993300360113
4118D06	15055514	128025006122804001053310470143
4118D06	15055614	127047011622706301743290500182
4118D06	15055714	12502400422250260069
4118D06	15055814	130047012522604001413250450164
4118D06	15055914	226031007440103601164300120042
4118D06	15056014	1270260063 32503201164260200074
4118D06	15056114	1250240049227028009032703701184210210072
4118D06	15056214	1290310090223043010332904701414240130048
4118D06	15056314	1280160029225018005432602300784250300101
4118D06	15056414	1290380090225039010632504701414250360125
4118D06	15056514	2010460154225053017532606501954300180081
4118D06	15056614	1270310072226038010632903401174290080031
4118D06	15056714	1310280076223034009932803601234250370125
4118D06	15056814	1310220064223017005232701100404290050020
4118D06	15056914	EST 115226043013632704301524300250105
4118D06	15057014	1280280082226032010732704101344290440146
4118D06	15057114	1280330099225030009233103901244290300107
4118D06	15057214	1270590186224063022532904801904270410194
4118D06	15057314	130 19 50227 26 75329 29 82430 8 32
4118D06	15057414	1300350092228046012432803701344300240099
4118D06	15057514	205 29 90226 36 108401 44 145501 39 147

4118D06	15057614	128 30	91228 45	102329 45	135430 22	97
4118D06	15057714	K290000001127 10	23304 29	48330 30	78428 0	00
4118D06	15057814	104 20	31202 27	84228 36	97328 28	89429 11
4118D06	15057914	K2602300641260360089302048014340104301594270400162				41
4118D06	15058014	K2901100271290200051227019007132803500985010000000				
4118D06	15058114	K2900100021290080010224008002332703000704290060024				
4118D06	15058214	K2902300401290380106223035011240505201594290370140				
4118D06	15058314	K2902600631250280083223029008832803100974270180070				
4118D06	15058414	K28 30	62130 25	70EST	130327 38	116EST
4118D06	15058514	K31 32	71204 36	89EST	120325 44	128EST
4118D06	15058614	K27 19	51130 19	55303 26	86328 18	73

Station : 18D06, LUCKY STRIKE

Enter a file name if output is to disk - CR if output is to terminal
 : a EMIGRANT !!!Appends to the file EMIGRANT (above)!!!

Output to file completed for station 18D06

Station : 18D06, LUCKY STRIKE

Enter a file name if output is to disk - CR if output is to terminal
 : Q !!!Proceeds to next site in List Number!!!

*** Type bye, done, q, or quit to leave the following loop ***

Precede a file name with append, or 'a' for appending mode
 with blanks as separators between that and the file name

Station : 18D05, MEACHAM

Enter a file name if output is to disk - CR if output is to terminal
 : Q !!!Bypass this site entirely!!!

:: Q !!!Exit DBQ!!!

D. DATA ANALYSIS

ODB supports several internal data analysis features. They provide statistical analysis of monthly data and analysis of CLIM data as formatted in the SCS National Soils Handbook.

1. Analysis of Monthly Data

Two functions are available to analyze monthly data: COLSUM and INDEX. COLSUM produces a sum over a given interval, e.g., OCT-DEC, and then ranks the values over the period of record. The data can be listed in ascending, descending or chronological order. Each value is assigned a log 10 and Weibull plot value, simple statistics are computed on the raw data and log conversions, and a probability table is produced. COLSUM will analyze one site at a time but will cycle through all sites included in the List Number request. The following command sequence produced the table below it:

:: P SITENAME "RED MOUNTAIN PASS"

2 stations found

:: 1

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	08	091	SNOT	14080104	07M33S	3753	10743	11200	RED MOUNTAIN PASS
2	08	113	SNOW	14080104	07M15	3754	10742	11020	RED MOUNTAIN PASS

:: COLSUM

List Number (from listing -- CR to leave)

: 2

Station : 07M15, RED MOUNTAIN PASS

Month(s) e.g. APR-MAY (CR to leave) : mar-may

*** Type q to leave following loop ***

Enter a file name if output is to disk - CR if output is to terminal
: red.clsm

Type 'a' or 'd' or CR for ascending, descending, or chronological order : a

Enter a file name of output is to disk - DR if output is to terminal
: q

Enter CR to see this station again, otherwise anything else : q

Gage No. Station : 07M15,RED MOUNTAIN PASS

Ranks	WY	Mar	Apr	May	Total	Weibull	Value
#	#	inches	inches	inches	inches	plotpos	log10
1	77	7.30	13.70	13.20	34.20	0.027	1.534
2	81	12.10	18.30	18.40	48.80	0.054	1.688
3	54	20.00	25.90	17.30	63.20	0.081	1.801
4	67	21.00	21.80	25.00	67.80	0.108	1.831
5	55	19.10	22.30	26.80	68.20	0.135	1.834
6	53	18.60	23.30	26.50	68.40	0.162	1.835
7	63	18.60	26.20	24.30	69.10	0.189	1.839
8	64	15.50	25.70	29.00	70.20	0.216	1.846
9	66	22.80	25.70	25.50	74.00	0.243	1.869
10	74	21.60	25.30	30.60	77.50	0.270	1.889
11	61	16.40	29.60	32.50	78.50	0.297	1.895
12	51	23.90	29.10	28.80	81.80	0.324	1.913
13	59	22.30	29.30	30.70	82.30	0.351	1.915
14	72	25.80	29.50	28.30	83.60	0.378	1.922
15	71	27.20	29.10	32.00	88.30	0.405	1.946
16	56	27.30	32.40	31.00	90.70	0.432	1.958
17	86	25.30	30.00	36.30	91.60	0.459	1.962
18	70	24.10	31.50	36.60	92.20	0.486	1.965
19	76	25.80	32.80	35.10	93.70	0.514	1.972
20	57	25.20	36.20	34.00	95.40	0.541	1.980
21	83	21.60	33.20	40.80	95.60	0.568	1.980
22	85	26.50	32.20	37.50	96.20	0.595	1.983
23	60	27.40	36.30	33.50	97.20	0.622	1.988
24	69	30.30	35.50	32.20	98.00	0.649	1.991

25	73	29.90	35.10	39.60	104.60	0.676	2.020
26	68	30.20	34.60	40.00	104.80	0.703	2.020
27	80	28.70	37.50	38.80	105.00	0.730	2.021
28	82	28.30	36.80	40.60	105.70	0.757	2.024
29	65	30.30	37.60	40.20	108.10	0.784	2.034
30	62	34.20	39.00	35.30	108.50	0.811	2.035
31	78	29.60	39.20	41.10	109.90	0.838	2.041
32	84	34.20	37.80	44.20	116.20	0.865	2.065
33	58	34.20	40.50	42.20	116.90	0.892	2.068
34	75	29.50	41.50	46.80	117.80	0.919	2.071
35	79	32.80	44.00	46.10	122.90	0.946	2.090
36	52	34.30	44.00	45.80	124.10	0.973	2.094

number of values = 36

arithmetic average = 90.31

log average = 1.942

std. deviation = 20.80

coeff of variation = 0.23

arithmetic skew = -0.553

log std. dev. = 0.116

log cof. var. = 0.060

log skew = -1.462

Exceed % Prob	Return Period	Normal Probability	Log Normal Probability	LP3 Probability
99.00	1.010	41.93	46.94	36.09
95.00	1.053	56.09	56.34	51.97
90.00	1.111	63.64	62.09	61.23
80.00	1.250	72.79	69.86	72.65
50.00	2.000	90.31	87.54	93.21
20.00	5.000	107.82	109.69	109.28
10.00	10.000	116.97	123.42	115.27
5.00	20.000	124.52	136.02	118.97
1.00	100.000	138.68	163.25	123.35

INDEX produces a table of weighted monthly values and, if more than one station is chosen, also weights the stations. Simple statistics on the raw values and log conversions are computed and a probability table is developed. INDEX tables are the mechanism for extracting data for use in the multiple regression program MULTRG. MULTRG and MADE (the data formatter) are explained elsewhere in this manual. The following command sequence produces the table below it:

```
:: f sitename stillwater camp
```

```
2 stations found
```

```
:: 1
```

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	49	043	PREC	16010101	8301	4052	11050	8550	STILLWATER CAMP
2	49	043	SNOW	16010101	10J17	4052	11050	8550	STILLWATER CAMP

```
:: INDEX
```

List Number (from listing — CR to leave)

: 2

Datatype : SNOW

Weight for station 10J17 (CR for default of 1) : 1

Enter the minimum water year - default is [55]

Enter the maximum water year - default is [86]

Enter a file name if output is to disk - CR if output is to terminal
:

Month(s) e.g. APR-MAY (CR to leave) : apr-may

Weight for March {CR for default of 1} : 1
Weight for April {CR for default of 1} : 1
Weight for May {CR for default of 1} : 1

Weight: 1.00 Station: 10J17, STILLWATER CAMP

Start Yr.	55	End Yr.	86	
Year (Wt.)	April (1.00)	May (1.00)	INDEX TOTAL	
55	11.50	0.10	11.60	
56	13.40	3.40	16.80	
57	13.60	13.00	26.60	
58	11.40	9.60	21.00	
59	14.40	6.40	20.80	
60	9.20	0.60	9.80	
61	7.40	4.90	12.30	
62	12.50	3.00	15.50	
63	8.00	7.80	15.80	
64	10.30	11.60	21.90	
65	16.20	14.30	30.50	
66	9.80	0.00	9.80	
67	12.20	11.50	23.70	
68	10.20	12.60	22.80	
69	12.40	7.10	19.50	
70	9.70	10.60	20.30	
71	14.70	7.80	22.50	
72	11.30	10.00	21.30	
73	8.80	9.60	18.40	
74	11.10	14.80	25.90	
75	11.80	14.30	26.10	
76	10.90	6.50	17.40	
77	6.90	0.00	6.90	
78	11.80	4.30	16.10	
79	10.70	6.10	16.80	
80	15.70	11.40	27.10	
81	7.90	4.30	12.20	
82	13.10	12.30	25.40	
83	10.00	11.00	21.00	
84	13.00	10.60	23.60	
85	9.40	2.60	12.00	
86	12.30	10.00	22.30	
	AVERAGE	19.18		
	MAXIMUM	30.50		
	MINIMUM	6.90		

number of values = 32
arithmetic average = 19.18 log average = 1.260
std. deviation = 5.83 log std. dev. = 0.152
coeff of variation = 0.30 log cof. var. = 0.121
arithmetic skew = -0.268 log skew = -0.957

Exceed % Prob	Return Period	Normal Probability	Log Normal Probability	LP3 Probability
99.00	1.010	5.61	8.04	6.36
95.00	1.053	9.58	10.21	9.43
90.00	1.111	11.70	11.59	11.36
80.00	1.250	14.27	13.53	13.91
50.00	2.000	19.18	18.18	19.21
20.00	5.000	24.09	24.42	24.52
10.00	10.000	26.66	28.50	27.08
5.00	20.000	28.78	32.37	29.01
1.00	100.000	32.75	41.11	32.08

To create an index of snow water equivalent for a basin, the user might group sites by elevation within the basin. Index allows more than one site as well as different weights per site and/or month. The following example uses three sites and requests different weights for each site and month. The output is read to a file called WEBER.X :

```
:: F DATATYPE SNOW AND HUC 16020101 AND ELEVATION
```

```
2,003 stations found
```

```
HUC : Upper Weber
```

```
19 stations found
```

```
6 stations found
```

```
:: 1
```

No.	ST	CTY	Type	HUC	Station	Lat.	Long.	Elev.	Sitename
1	49	043	SNOW	16020101	11J02	4054	11104	8200	CHALK CREEK #2
2	49	011	SNOW	16020101	11J11	4058	11148	8000	FARMINGTON CANYON
(UPPER)									
3	49	057	SNOW	16020101	11E21	4119	11127	8260	HORSE RIDGE
4	49	029	SNOW	16020101	11E50	4111	11132	8000	PINE CANYON
5	49	043	SNOW	16020101	11J06	4041	11113	8500	REDDEN MINE (LOWER)
6	49	043	SNOW	16020101	11J39	4050	11117	8300	SERGEANT LAKES

```
:: index
```

```
List Number (from listing -- CR to leave)  
: 1,2,5
```

```
Datatype : SNOW
```

```
Weight for station 11J02 (CR for default of 1) : .8
```

```
Weight for station 11J11 (CR for default of 1) : 1.0
```

```
Weight for station 11J06 (CR for default of 1) : 1.1
```

```
Enter the minimum water year - default is [30] 55
```

```
Enter the maximum water year - default is [86] 86
```

```
Enter a file name if output is to disk - CR if output is to terminal  
: WEBER.X
```

```
Month(s) e.g. APR-MAY ( CR to leave ) : APR-MAY
```

Weight for April (CR for default of 1) : 1.2
Weight for May (CR for default of 1) : .8

OUTPUT to file weber.x COMPLETED

Enter a file name if output is to disk - CR if output is to terminal
: q

:: q

The file WEBER.X will contain the following table :

Weight: 0.80 Station: 11J02, CHALK CREEK #2
Weight: 1.00 Station: 11J11, PARMINGTON CANYON (UPPER)
Weight: 1.10 Station: 11J06, REDDEN MINE (LOWER)

Start Yr.	55	End Yr.	86
Year	April	May	INDEX
(Wt.)	(1.20)	(0.80)	TOTAL
55	67.02	41.98	109.00
56	75.54	34.02	109.56
57	74.44	60.74	135.17
58	84.20	58.28	142.48
59	61.10	*****	*****
60	60.68	31.08	91.76
61	51.88	27.55	79.43
62	92.60	42.76	135.36
63	50.65	50.16	100.81
64	63.00	49.82	112.82
65	98.45	61.40	159.85
66	59.81	28.42	88.22
67	67.91	56.20	124.11
68	75.01	58.06	133.07
69	98.75	57.10	155.85
70	71.63	54.16	125.79
71	94.58	55.66	150.24
72	85.12	62.21	147.32
73	79.32	57.55	136.87
74	73.03	60.76	133.79
75	94.44	72.40	166.84
76	79.84	52.46	132.29
77	43.98	11.85	55.83
78	87.17	57.64	144.81
79	77.83	*****	*****
80	102.06	53.71	155.77
81	55.63	31.06	86.69
82	97.43	68.22	165.65
83	97.12	68.31	165.43
84	100.57	67.97	168.54
85	89.59	42.24	131.83
86	101.52	71.17	172.69
	AVERAGE		130.60
	MAXIMUM		172.69
	MINIMUM		55.83

number of values = 30
arithmetic average = 130.60 log average = 2.103
std. deviation = 29.84 log std. dev. = 0.115
coeff of variation = 0.23 log cof. var. = 0.055
arithmetic skew = -0.676 log skew = -1.308

Exceed S Prob	Return Period	Normal Probability	Log Normal Probability	LP3 Probability
99.00	1.010	61.19	68.56	54.20
95.00	1.053	81.51	82.06	76.20
90.00	1.111	92.34	90.32	88.97
80.00	1.250	105.47	101.44	104.82
50.00	2.000	130.60	126.70	133.98
20.00	5.000	155.72	158.23	158.06
10.00	10.000	168.85	177.72	167.71
5.00	20.000	179.68	195.60	174.04
1.00	100.000	200.01	234.12	182.25

2. CLIMate Data Analysis

The SCS National Soils Handbook specifies the format for analysis of climatological data from NWS CLIMate stations. All three tables (see SCS National Soils Handbook, Part 605, Exhibit 605-2) are currently available in ODB under the acronyms FROST, GROWTH and TAPS.

FROST analyzes the data from a specific CLIM station to determine the frost free growing season at that site. The temperature divisions (less than 24F, 28F or 32F) and probabilities (10, 20 and 50%) are preprogrammed. The following example is from site 1267, CEDAR CITY FAA AP, in Utah.

Station : CEDAR CITY FAA AP, 1267
start yr. - 1948 end yr. - 1986

Probability	Temperature		
	24F or lower	28F or lower	32F or lower
Last freezing temperature in spring : March-June			
1 year in 10 later than--	May 4	May 19	June 7
2 year in 10 later than--	April 29	May 13	May 31
5 year in 10 later than--	April 18	May 1	May 19
First freezing temperature in fall : August-Nov.			
1 yr in 10 earlier than--	October 6	September 24	September 15
2 yr in 10 earlier than--	October 13	September 30	September 21
5 yr in 10 earlier than--	October 26	October 12	October 1

GROWTH computes the probable length (10, 20, 50, 80 and 90%) of the growing season at a site for daily minimum temperatures of 24F, 28F, and 32F. The example below is also from site 1267 Utah.

Station : CEDAR CITY FAA AP, 1267
start yr. - 1948 end yr. - 1985

Probability	Daily Minimum Temperature		
	# days > 24F	# days > 28F	# days > 32F
9 years in 10	230	204	177
8 years in 10	246	218	189
5 years in 10	278	246	211
2 years in 10	309	273	234
1 year in 10	325	288	245

TAPS summarizes the temperature and precipitation at a site and computes monthly averages, 20% probable extremes and average growing degree days. The default temperature threshold for growing degree days is 50F, but the user may enter any other example. The following TAPS example is from site 1267, CEDAR CITY FAA AP.

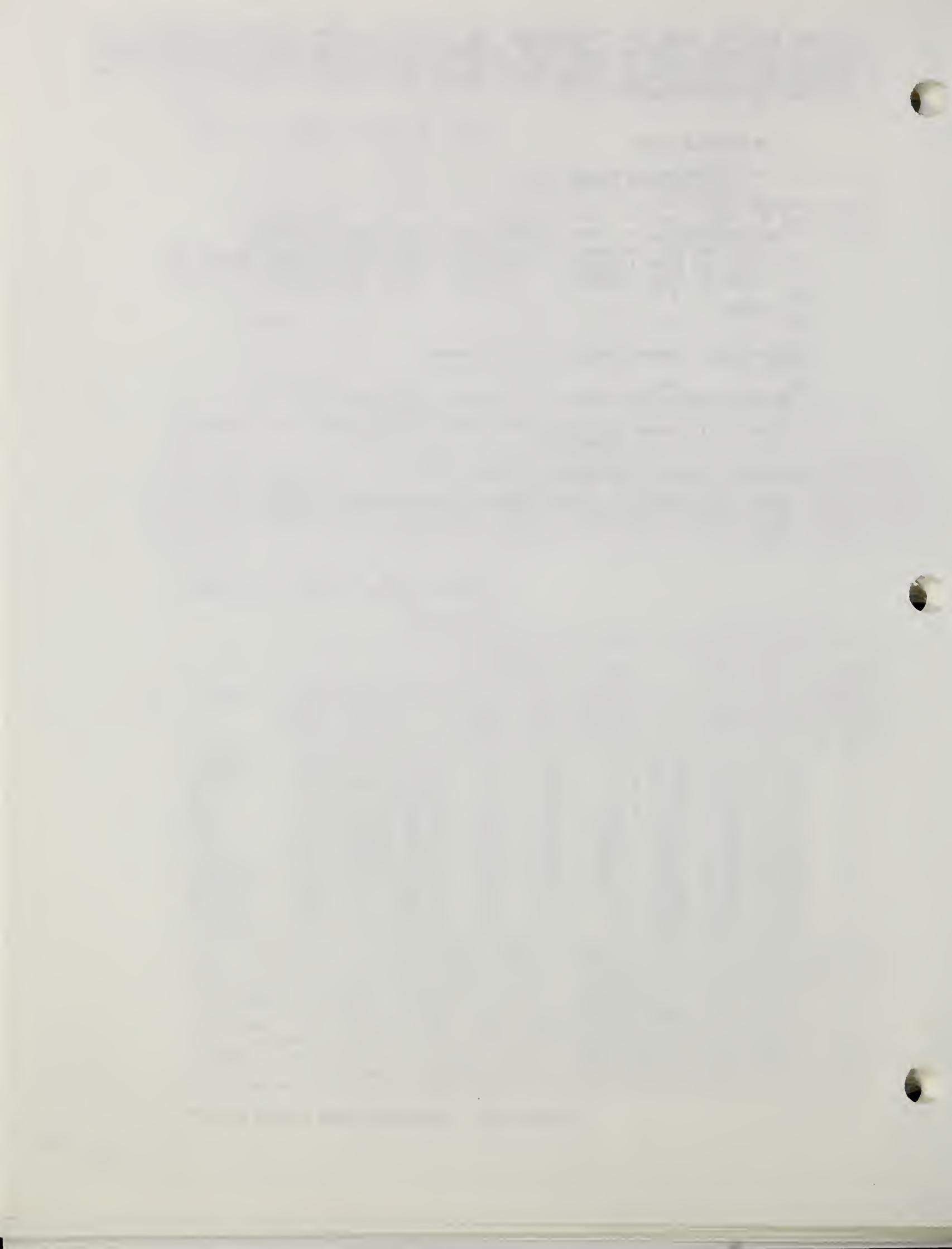
Station : CEDAR CITY FAA AP, 1267
start yr. - 1948 end yr. - 1986

Month	Temperature						Precipitation				
				2 years in 10 will have			avg no. of grow'n degree days	2 yrs in 10 will have			average number of days with 0.10 inch or more
	avg daily max	avg daily min	avg	max temp. >than	min temp. <than	days		avg (in.)	less than (in.)	more than (in.)	
January	41.6	17.1	29.3	62	-12	1	0.72	0.19	1.14	2	
February	46.6	21.4	34.0	67	-8	0	0.78	0.33	1.20	2	
March	52.4	26.3	39.4	72	4	7	1.21	0.46	1.89	3	
April	61.6	33.0	47.3	79	15	58	0.98	0.41	1.47	3	
May	71.8	41.0	56.4	88	25	229	0.84	0.22	1.37	2	
June	83.4	49.3	66.3	98	32	491	0.44	0.14	0.80	1	
July	90.1	57.9	74.0	100	40	734	1.07	0.34	1.71	2	
August	87.5	56.4	71.9	98	42	680	1.23	0.35	2.00	3	
September	79.9	47.3	63.6	93	26	411	0.85	0.27	1.49	1	
October	67.2	36.0	51.6	84	16	129	0.83	0.21	1.37	2	
November	53.0	25.7	39.3	72	2	7	0.88	0.26	1.39	2	
December	43.9	18.5	31.2	63	-8	0	0.70	0.26	1.09	2	
Yearly :	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
Average	64.9	35.8	50.4	-----	-----	-----	-----	-----	-----	-----	-----
Extreme	104	-26	---	101	-15	---	---	---	---	---	---
Total	-----	-----	-----	-----	-----	2747	10.53	6.41	13.49	25	-----

Growing Degree Days Threshold : 50.0 deg. F

These tables can be requested by entering the proper acronym at the :: prompt. Enter the list number of a CLIM site or sites when asked for a listing. The TAPS table above was compiled with the following DBQ commands:

```
:: P STATION 1267
      2 stations found
:: l
No. ST CTY Type      HUC   Station Lat. Long. Elev. Sitename
--- -- --- ----- -----
1 49 021 CLIM 16030006    1267 3742 11306  5610 CEDAR CITY FAA AP
2 49 021 PREC 16030006    1267 3742 11306  5610 CEDAR CITY FAA AP
:: TAPS
List Number (from listing -- CR to leave)
: 1
Growing Degree Days Threshold (CR for default of 50 deg. F) :
Enter a file name if output is to disk - CR if output is to terminal
: CEDAR.TAPS
OUTPUT to file cedar.taps COMPLETED
Enter CR to see this station again, otherwise anything else : q
:: q
```







VI. WATER SUPPLY PRODUCTS INFORMATION DIRECTORY

SNOW SURVEY PROGRAM STAFF LEADERS AND TELEPHONE ACCESS NUMBERS

STATE	FIPS	CONTACT / TITLE / ADDRESS	TELEPHONE
ALASKA	02	George P. Clagett, Data Collection Office Supervisor Federal Building 201 East 9th Ave., Suite 300 Anchorage, Alaska 99501-3687	(907) 271-2424
ARIZONA	04	Ronald, A. Jones, Water Supply Specialist. 201 East Indianola, Suite 200 Phoenix, Arizona, 85012	(602) 241-5179 FTS 261-5179
COLORADO	08	Michael A. Gillespie Collection Office Supervisor. Diamond Hill Complex, Bldg. A. 3rd Floor, 2490 West 26th Avenue Denver, Colorado, 80211	(303) 964-0492 FTS 564-0492
IDAHO	16	Gerald A. Beard, Data Collection Office Supervisor. 3244 Elder Street. Boise, Idaho, 83705	(208) 334-1614 FTS 554-1614
MONTANA	30	Phillip E. Farnes, Data Collection Office Supervisor. 10 E. Babcock Federal Building, Room 443 Bozeman, Montana 59715	(406) 587-6843 FTS 585-4843
NEVADA	32	Chris J. Pacheco, Water Supply Specialist. 1201 Terminal Way, Room 219 Reno, Nevada 89502	(702) 784-5878 FTS 470-5878
NEW MEXICO	35	Ken Martin, Water Supply Specialist. 517 Gold Ave., SW Room 3301 Albuquerque, New Mexico 97102	(505) 766-3277 FTS 474-3277
OREGON	41	Stanley R. Fox, Office Supervisor. 16th Floor, Federal Building 1220 S.W. Third Avenue Portland, Oregon 97204	(503) 221-2757 FTS 423-2757
UTAH	49	Jon G. Werner, Data Collection Office Supervisor.	(801) 524-5213 FTS 588-5213

Room 4402, Federal Building
125 South State Street
P.O. Box 11350
Salt Lake City, Utah 84147

WASHINGTON 53	William R. Weller, Water Supply Specialist. W. 920 Riverside, Room 360 Spokane, Washington 99201-1080	(509) 456-3715 FTS 439-3715
WYOMING 56	Ted Gilbert, Water Supply Specialist. Water Supply Forecasting Staff 100 East "B" Street Casper, Wyoming 82601	(307) 261-5432 FTS 328-5432

WEST NATIONAL TECHNICAL CENTER

Water Supply Forecasting Staff (503) 221-2843
511 NW Broadway, Room 547 FTS 423-2843
Portland, Oregon 97209-3489

David E. Johnson, Snow Survey Program Manager.

Kenneth C. Jones, Data Analysis Group Leader.
Garry L. Schaefer, Data Collection Group Leader.
Robert K. Hartman, Hydrologist, Missouri Basin
Tom Perkins, Hydrologist, Colorado River, Rio Grande,
Arkansas River Basins
Barbara Sarantitis, Hydrologist, Lower Columbia and Snake River Basins.
Jim Marron, Hydrologist, Great Basin, Alaska
Vacant... Upper Columbia.
Chuck Bell, Soil Conservationist, California, Hawaii, western states

NATIONAL HEADQUARTERS, SCS

National Headquarters, SCS (202) 447-6267
P.O. Box 2890 FTS 447-6267
Washington, D.C. 20013-2890

Tom George, Director, Resources Inventory Division

Centralized Forecast System Telecommunications Access

Telephone #	Rotary #	Baudrate	Comments
(503) 326-3120	1	300-2400	FTS prefix 423
326-3146	2	300-2400	
326-2719	3	300-1200	
326-2662	4	300-1200	
326-5767	5	300-1200	
326-5768	6	300-1200	
326-3577	7	300-1200	
326-3578	8	300-1200	
326-3596	9	300-1200	
326-3599	10	300-1200	
326-3640	11	300-1200	

Microcom -MNP, error free protocol

Telephone #	Rotary #	Baudrate	Comments
(503) 326-3388	1	300-2400	MNP protocol
326-3389	2	300-2400	

DEPNET / TELENET PORTS

DEPNET Address	Media	Baudrate	# Ports
C 503624	TP3010	300-4800	8
C 503147	XODIAC/TC	4800	8

DEPNET / TELENET ACCESS NUMBERS

These access telephone numbers are provided for most Federal agencies. If you are not sure of your local TELENET access number, contact your administrative office. DEPNET / TELENET access requires a special Username and I.D. which are not the same as the ones required for the Centralized Forecast System at Portland, Oregon.

SNOTEL (See SNOTEL Users Manual for more information).

Baud	Duplex	Cooperator
300	FULL	(503) 326-6372
1200	FULL	(503) 326-5445

* HOTLINE NUMBER FOR PERSONAL ASSISTANCE:

Centralized Forecast System (CFS)
&
SNOWTEL Computer

(503) 326-2858
FTS 423-2858

*SYSTEM STATUS MESSAGES (taped):

Centralized Forecast System (CFS)
&
SNOWTEL Computer

(503) 326-2191
FTS 423-2191

** Contact your Data Collection Office Supervisor or Water Supply Specialist for more information concerning the SNOWTEL computer Front End and Back End.



